

STATE OF NEW JERSEY.

THIRTEENTH ANNUAL REPORT

OF THE

New Jersey Board of Agriculture.

1885.

PRINTED BY ORDER OF THE LEGISLATURE.

TRENTON, N. J.:
JOHN L. MURPHY, STATE PRINTER.

1886.

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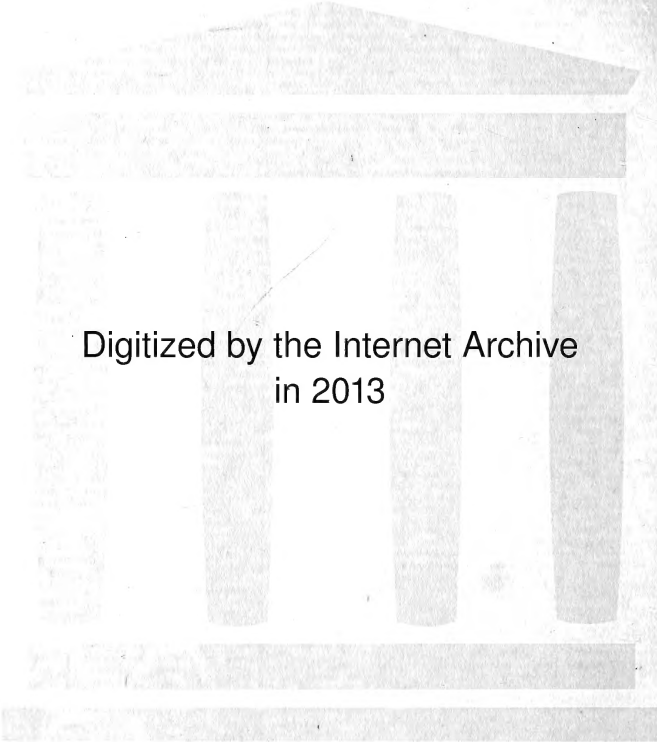
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STATE BOARD OF AGRICULTURE.

OFFICERS FOR 1886.

PRESIDENT.

HON. EDWARD BURROUGH.....Merchantville, Camden County.

VICE-PRESIDENT.

WILLIAM R. WARD.....Newark, Essex County.

TREASURER.

FRANKLIN DYE.....Trenton, Mercer County.

SECRETARY.

WILLIAM S. TAYLOR.....Burlington, Burlington County.

EXECUTIVE COMMITTEE.

PROF. GEO. H. COOK.....New Brunswick, Middlesex County.

D. D. DENISE.....Freehold, Monmouth County.

MORRIS BACONGreenwich, Cumberland County.



To the General Assembly of New Jersey :

In accordance with the provisions of the act creating a State Board of Agriculture, adopted April 22d, 1884, I have the honor to present the annual report for 1885.

WM. S. TAYLOR,
Secretary.

BURLINGTON, Burlington County, February 15th, 1886.

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STATE BOARD OF AGRICULTURE.

THIRTEENTH ANNUAL MEETING.

MASONIC HALL,
TRENTON, N. J., February 2d, 1886. }

The meeting was called to order by the President, Hon. Thomas H. Dudley, at 10:40 A. M.

The Chair.—The hour appointed for the meeting of the State Board of Agriculture has arrived. It gives me great pleasure, and I have no doubt all the other members of the Board feel the same way, to see so many here to-day at the commencement of our meeting.

With many of our farmers book farming and experimental farming are looked upon with disfavor. Some of our farmers believe in the old ways of doing the same things their fathers did before them, in following the same rules their fathers did in their manner and time of planting, in the rotation of their crops, in the seeding and in the harvesting, and they cannot believe that there can be any good derived from books and experimental farming.

Fortunately for the farmers and for the great agricultural industries those mistaken ideas are passing away, and with the enlightenment and the intelligence of the age new ideas have grown up among them, and people have begun to learn that sometimes by experimenting and by what has been written on the subject of agriculture much benefit to the industry could be obtained.

The gathering here to-day I construe as indicating a great change in the sentiments of the farming community, which is not only of importance to themselves and to this Board, but of importance also to the great industrial interests of agriculture throughout this and our sister States.

The Executive Committee have prepared programmes of the exercises which are to take place during the two days' sessions of this Board.

Mr. Taylor, Burlington.—Mr. President, before beginning with the programme, I move you that a committee of three be appointed to wait on the Governor of the State, the President of the Senate, the Speaker of the House and the respective bodies, and extend to them an invitation to attend this meeting.

Motion carried, and the Chair appointed :

Mr. Taylor, Burlington ; Prof. Cook, New Brunswick ; D. D. Denise, Freehold.

The Secretary read the report of the Executive Committee, which was unanimously approved.

REPORT OF THE EXECUTIVE COMMITTEE.

Gentlemen of the State Board of Agriculture :

This will be the thirteenth annual report of the New Jersey State Board of Agriculture since its organization. At first the growth of this Board was slow, but those who aided in its organization and have been active in its councils ever since have always been sanguine of its ultimate success and usefulness. Its annual meetings now bring together the best and most enlightened farmers, fruit growers and cattle breeders in our State. The deliberations, discussions, and county reports published by this Board annually, are extensively copied by the agricultural press, and have a wide reading, and exert a healthy influence and practical reforms among the farmers of our State. The Executive Committee and officers you elected a year ago have during the past year, in performing their duties, endeavored to extend and broaden the field of usefulness for which this Board was originally organized. This report is meant to give you a brief outline of the labor and efforts of your officers and Executive Committee in performing their duties during the year just closed, with the earnest hope that what they have done may meet with your approval. Before entering on a detail of these matters, we desire to call the attention of the members to some facts which will more or less interest every farmer in our State. From an agricultural standpoint, the year 1885 has not been a prosperous or profitable one for the farmers, fruit growers or gardeners of our State. The Winter of 1884 was the most damaging in plant-life that we have had for twenty years. The fall of snow was unusually light ; the mercury ranged low, with frequent high winds, proved very disastrous to the crowns of Winter wheat,

rye and clover, and the strawberry, raspberry and blackberry were badly injured from the causes named. The strawberry crop suffered the most. It is safe to say that the crop of strawberries would not average one-third throughout the State. One grower, who marketed in 1884, 1,050 bushels of strawberries, and from the same surface in 1885 the yield was only 320 bushels. With a short crop and high prices the loss would be partially made up. But this was not the case in 1885, for the prices of all kinds of farm and garden produce ranged lower than they have for twenty-five years, with the single exception of potatoes, and the staple crops ranged about nine per cent. lower than they did in the year previous, that is, 1884. While the causes of these low prices may be traced and duly accounted for, even this knowledge would not make up the losses of the year, or make the farmer's bank account any better than it is, even if such problems were solved and placarded over the whole State.

There is a large part of the arable land in our State devoted to the growth of corn, wheat and oats. According to the estimates just received from the Department of Agriculture, at Washington, D. C., the following figures are given for the year 1885 for these three cereal crops, with the yield per acre of each one. There was planted in corn in our State in 1885, according to the authority named, 350,370 acres, giving a total yield of 11,212,000, or an average yield of thirty bushels to the acre. In wheat there was planted 143,097 acres, which yielded 1,395,000 bushels, or at the rate of ten bushels to an acre in round numbers. There was devoted to the oat crop 133,451 acres, the gross yield of which was 3,556,000 bushels, which gives an average of about $37\frac{1}{2}$ bushels to the acre. The average based on those figures is much lower for corn and wheat than in former years, but the average for the oat crop is higher than usual. We give these facts in order to call the attention of the members of this Board, and the farmers of our State, to the difference in yield of the same, and other crops, grown in different parts of the State, under what may be termed improved systems of culture. The State has for a number of years offered cash premiums for farm, orchard and garden crops. These premiums are awarded by a State premium committee. This committee consists of seven persons, three of whom are selected from this Board, three from the State Agricultural Society, with the Governor of the State, which makes the full committee. The competitors for these premiums have to send to the committee a surveyor's certifi-

cate, and affidavits of two disinterested persons, who were witnesses, to verify their accuracy. This committee has just made their awards on the subjoined schedule of crops, which are as follows:

FARM CROPS.—WINTER PREMIUMS OF 1885.

ENTRY MADE BY—	ADDRESS.	Number of acres.	CROP.	TOTAL YIELD.	YIELD PER ACRE.	First premium.	Second premium.
J. H. Denise.....	Freehold ...	5	Wheat.....	217 $\frac{1}{2}$ bushels...	43 $\frac{1}{2}$ bushels.....	\$25 00	
J. H. Herbert.....	Marlboro ...	5	Rye	220 "	44 "	25 00	
J. C. Du Bois.....	Manalapan ...	5	Rye	191 $\frac{2}{3}$ "	38 $\frac{1}{3}$ "	\$15 00	
J. H. Denise.....	Freehold ...	5	Corn.....	547 "	109 $\frac{2}{3}$ "	25 00	
L. Du Bois.....	Manalapan ...	5	Corn.....	484 "	96 $\frac{2}{3}$ "		15 00
S. B. Wills.....	Monmouth ...	5	Clover hay....	13 $\frac{5}{8}$ tons	2 $\frac{1}{2}$ tons.....	25 00	
J. H. Denise.....	Freehold ...	5	Timothy hay..	11 $\frac{3}{4}$ "	2 $\frac{1}{2}$ "	25 00	
Henry Campbell....	Freehold ...	1	Apples.....		250 barrels.....	20 00	
Henry Campbell....	Freehold ...	1	Raspberries...		150 bushels.....	20 00	
John Van Doren....	Manalapan ...	1	Grapes.....		13,151 lbs.....	20 00	
J. H. Willey.....	Keyport ...	1	Grapes.....		7,825 "		10 00
Henry Campbell....	Freehold ...	1	Potatoes.....		24 barrels.....	20 00	
H. D. Oliphant....	Orange	1 $\frac{1}{2}$	Carrots.....	279 bushels.....	1,116 bushels.....	15 00	
John H. Cooper.....	Pompton ...	1 $\frac{1}{2}$	Carrots.....	25 "	90 "		10 00
Jos. Erickson.....	Camden.....	1 $\frac{1}{2}$	Tomatoes.....	210 "	840 "	15 00	
L. Du Bois.....	Manalapan ...	1 $\frac{1}{2}$	Tomatoes.....	174 "	696 "		10 00
Ralph Cooper.....	Pompton ...	1 $\frac{1}{2}$	Onions.....	180 "	720 "	15 00	
John H. Cooper.....	Pompton ...	1 $\frac{1}{2}$	Onions.....	162 "	648 "		10 00

These large yields come before the committee verified as stated, by reliable witnesses, accompanied by affidavits to indorse their truthfulness, with a written description of the methods of planting, fertilizing and cultivation. The difference in yield per acre of corn, wheat and other crops in the list just read, and the average of the State, gives food for reflection, and a wide margin for increasing our acreage products. As these premium crops will be printed in our annual report, the members of the Board will have the opportunity of reaching their own conclusions, and at the same time making an effort this year to equal if not surpass these large crop returns.

Immediately after the last annual meeting, the Secretary set to work with a will to put the matter in proper shape for the printer, and on the seventeenth of February, ten days after the meeting, the whole of the matter was revised and edited and placed in the printer's hands. The printer then promised that on the fifteenth of March the edition of the report would be printed and delivered at the State House. But we regret to say that printers' promises are not always reliable, and in this instance they came wide of the mark. By frequent and urgent appeals, we were able to get 500 copies of the edition of 8,000 delivered to

the members of the Legislature the first week in April, the day before the Legislature adjourned. It was ten days before the balance of the edition was delivered at the State House. The Executive Committee were then called together at Trenton, and the Secretary furnished a full list of the number of copies for the different County Societies and County Boards. The Assistant Treasurer then promised the Executive Committee to send out these copies at once. But instead of doing this, he kept the list and reports for three weeks, and then shipped the balance of the edition of 6,000 copies to the Secretary, at Newark, with the statement that, owing to the fire at the State House, they could not do as they had in the past, ship the reports from Trenton, and save thereby time and expense. The Secretary sent to the County Boards the number of copies they wanted, three days after the reports reached Newark. We mention these facts in explanation as to why the cause of delay, and hope no such delay will occur again.

In accordance with the twelfth section of "An act to organize and establish a State Board of Agriculture," in the laws of 1884, page 241, which says: "That in order to collect and disseminate reliable and valuable information, it shall be the duty of the Executive Committee of the State Board of Agriculture to apportion to the State Horticultural Society, and the several County Boards organized under this act, sums of money as they may deem adequate for this purpose." When the report was printed the Executive Committee met at Trenton and examined the State and county reports, and they decided that the distribution of money should be made on the practical merits of these reports. On this basis the following sums were ordered to be paid to the following State and County Boards :

State Horticultural Society.....	\$200 00
Burlington County Board of Agriculture.....	40 00
Monmouth County Board of Agriculture	15 00
Camden County Board of Agriculture	5 00
Cumberland County Board of Agriculture... ..	10 00
Hunterdon County Agricultural Society.....	10 00
Mercer County Board of Agriculture	15 00

Making the total for these reports.. .. \$295 00

The Secretary was requested to inform the County Boards that this plan would be followed for the reports prepared for our next annual report. This information was sent out by a circular early in the year.

and it is likely to be of great value, as an incentive to get more and reliable statistical and useful information embodied in the County Board reports. To aid in this work the Secretary of the State Board was requested by the Executive Committee to prepare a blank form for crop returns, to be distributed among the farmers, in order to get more accurate information on subjects bearing on agriculture and kindred branches. The blank form prepared, while yet crude and imperfect, as first experiments are likely to be, will be amended and made better adapted to our wants this year. The form, as it stands, contains the best features of all of the blank crop forms published in this country. Each of the County Associations was furnished with these forms for distribution, and in counties with no County Boards the forms were sent to prominent farmers, with the hope of awakening an interest in the subject that would lead to the formation of County Boards in those counties. This committee earnestly appeals to the representatives now attending this session from counties having as yet formed no County Boards, that they will, on their return, aid in doing so at once. During the past year there have been two new County Boards formed, one in Hunterdon and one in Middlesex. These two, with those already organized, give us ten County Boards, leaving eleven counties without any.

The following is a list of the County Boards, with the date of their organization, the names of the Secretaries, and their post office address :

COUNTY.	DATE OF ORGANIZATION.	SECRETARY.	ADDRESS.
Atlantic	December 6, 1882.....	Z. U. Matthews.....	Hammonton.
Burlington	December 30, 1882.....	Henry I. Budd.....	Mt. Holly.
Camden.....	November 23, 1882.....	Geo. T. Haines.....	Haddonfield.
Essex.....	November 16, 1882.....	J. H. Baldwin.....	Livingston.
Gloucester.....	January 25, 1883.....	Geo. H. Gaunt.....	Paulsboro.
Hunterdon	November 14, 1883.....	E. M. Heath	Locktown.
Mercer.....	March 20, 1883.....	Franklin Dye.....	Trenton.
Middlesex.....	November 2, 1885.....	J. M. White	New Brunswick.
Monmouth.....	August 19, 1884.....	D. D. Denise.....	Freehold.
Morris.....	.....	Wm. F. Ely	Madison.
Union.....	March 6, 1884.....	Dennis C. Crane.....	Roseville.

Your Executive Committee have the pleasure of announcing to you that the English sparrow is no longer protected by law. The substance of the resolutions passed at the last annual meeting are now a law of the State, and will be found on page 272, Laws of 1885. The committee have also had passed by the last Legislature a supplement to the law of 1884, under which this Board is now working. The supplement reads as follows: "That from and after the passage of this

act, the County Board of Agriculture in each county of this State, the State and Pomona Granges of Patrons of Husbandry, the State Agricultural Society and the State Horticultural Society shall each have power to select and appoint two directors to the State Board of Agriculture, who shall hold that office for two years, and that the State Board of Agriculture shall have the right and power to elect their officers and committees, or any of them, either from among the directors or from among any of the members of the Board who are not directors."

This act was approved March 10th, 1885.

The Executive Committee has prepared a programme for this meeting, which they hope will meet your approval and approbation. They have fewer papers and essays than they had on their programme a year ago. This change was in accordance with the express wish of a large number of the members of this Board, and in keeping with the judgment of the committee. The present programme will afford more time for a general discussion on all topics which come up before the meeting. The discussions will be reported in full, and they will be printed in the annual report.

When the subject of "Dairy Interests" is under discussion, it may be well to take up the matter of the present method of evading the law in the sale of oleomargarine, under what may be termed false pretenses, the details of which will be stated when the subject is under discussion. Another and very important matter is that of carrying on field experiments with special fertilizers, and keeping an accurate record of the same to be reported at these annual meetings. Such experiments, properly and intelligently conducted, would be of great value in helping to solve many knotty questions now unsettled.

Again, we have in our State a large surface of the very best land devoted to fruit raising. Among the lists of fruits which succeed in our State the pear is prominent. At present the largest profits are only realized by extending its season of ripening. This has been successfully accomplished by several large growers of pears in Essex county by means of retention houses, and ice as the agent. A description of the process would prove a profitable topic, if the meeting finds time to reach it before adjourning. With this brief history of the year's doings, and suggestions submitted for your consideration, with the earnest hope that the present meeting will be a success, we remain,

Yours very respectfully,

EXECUTIVE COMMITTEE OF 1885.

Judge Holcomb.—In regard to the question of the English sparrow, I am very much interested. If the members would care to hear it, I would like to tell them my plan for getting rid of these pests. They became so bad and so troublesome that I tried this plan: I took cracked corn and soaked it in strong brine and scattered it around where the sparrows could get at it. In a few days the corn all disappeared, and the sparrows, too.

The Secretary.—While that subject is up I would like to say one word. I understand there is an effort being made to repeal the law that was passed last year. In fact, the subject was under discussion in the Senate last night. I, as a fruit grower, would not like to see this present law interfered with at this time.

The Chair.—The Chair would like to hear the subject discussed. I think we should be heard on this subject before the Legislature before the subject is acted upon. Let the members speak their views on this subject fully and freely.

Mr. Williams, Essex.—I for one do not want to see the sparrow law repealed. I was very glad to see that the Legislature has passed a law about the sparrows. He is a very troublesome cuss [Laughter]—that is about what he ought to be called. You can't call him anything else. I understand there is to be an effort made to place the robin in the same class. If so, I would like to know what charges they can bring against him. If he has committed or been caught in any crime I would like to know of it. I think this is also a matter which may be profitably discussed here, with the sparrow question. The robin is included, as I understand it. The sparrow is among those we are now allowed to destroy. I understand there has been a law introduced in the Legislature at this session to place the robin on the same footing—in the same category as the sparrow. I hope this question will also be discussed while we are discussing the sparrow question.

Mr. Rogers, Essex.—I should be very sorry, indeed, to see the sparrow protected. In the West, but a short time ago, the cry among the farmers was that the sparrows must go, because they were making such depredations in the wheat crops, and other crops—that in fact they were becoming an alarming evil. I think there is no bird which causes more trouble to the seed and fruit grower and agriculturist than this same sparrow. As to there being any reason for the repeal of this bill passed last year so as to protect the sparrow again, I know of no reason, and if there is a reason why he should be placed on the list of the protected birds I don't know what it is.

Mr. Stiles, Sussex.—In reference to the robin question, I think there was a bill passed last Winter to protect song birds from slaughter, for the reason that a great many people came over into New Jersey and killed many of these birds to be used for the ornamentation of women's bonnets. This destruction has been carried on to such a very great extent that only last year in the New York State Horticultural Society an effort was made to get their Legislature to pass a law like that of New Jersey, to protect the song birds. The law passed in New Jersey is the first of its kind in the United States, and it is a good law. I learned last night that there has been a bill offered repealing this law, so far as the robin is concerned. I do not agree with those who claim that the robin is a bad bird, and the worst I ever saw of his doings was the picking off and eating of dangerous insects. The great trouble with some of these people who are crying out about the robin being a destructive bird or a dangerous bird is due to the fact that they make good pot-pie. They want him on the list of game birds, so they can get him for pot-pie. This is where the trouble lies, and if this Board sees fit to take action on the sparrow question, I think we should also take some action jointly on the robin question.

Judge Holcomb, Hunterdon.—I hope we will take some action, especially on the sparrow question. A short time ago one of the farmers in my neighborhood took the trouble and pains to ascertain that there were 800 farms in the county. Put the estimated damages by sparrows to each farm at \$3.00, multiply the \$3.00 by 800, and you will see the immense amount of damage done in our county by the sparrows. Three dollars is a very low estimate, and I do not think it would begin to pay me for all the damage they have done on my farm.

Mr. Crane, Essex.—I would like to ask upon what ground the repeal of this law is asked for.

The Chair.—The Chair is unable to state the ground for repealing the law—in fact I did not hear until I arrived in town to-day that there was to be an attempt made to secure the repeal of this law. I am surprised that any effort should be made to kill off the robin. He is a very dear bird to me, and I am very fond of having him around my place. I am satisfied, although I am a lover of all birds, that the sparrow is a very great nuisance. I think the law passed making him a bird that might be killed whenever and wherever found was a good law, and a necessary one.

Mr. Forsythe, Burlington.—Mr. President, I would like to say one word in favor of the much-abused sparrow. I think they should be encouraged all that we can. He is a great help to us if we will but see it in the right light. If the farmer has never had any hope of getting rid of his surplus wheat, he can at least hope the sparrow will help him. [Laughter.] To dispose of our crops at a fair price is out of the question, so let us propagate those insects which will destroy our crops. [Laughter.] Let us dispose of our crops in this way and have a short crop to sell at a high price. That is better than a good crop and no sales. [Laughter.] I, therefore, speak one good word for the poor sparrow. [Loud laughter.]

Mr. Dye, Mercer.—I am opposed to this; the sparrow must go. He has driven out the wren and the blue birds and the robins—he has driven them away from my place. We know that the wrens and blue birds and robins are always busy, and we should endeavor to encourage them, but we put up boxes for the wrens and the sparrows drive them out and occupy the boxes themselves. Let us do away with the sparrow.

Mr. Burrough, Camden.—I am glad that this subject has been discussed so fully, and that so much information has been brought out, and so far from seeing the sparrow protected it is very evident that it is the sentiment of this Board that the sparrow is to have no protection—that he must go.

I wish to say, sir, that there is hardly a man within the sound of my voice who is more fond of birds than I am, or who is a greater lover of our native songsters. But this sparrow is a foreigner; he is not only a foreigner, but he is a depredator. [Applause.] He is driving away all our native songsters. Why, gentlemen, I prefer the crow to the sparrow. [Laughter.] As regards the sentiment of this Board as to the bill now before the Legislature, I would offer the following resolution:

Resolved, That in the estimation of the State Board of Agriculture the law of 1885, exempting the English sparrow from the protection of the insectivorous bird laws, meets our earnest and emphatic approval;

Resolved, That we hereby protest against any repeal of said laws, and we call upon our Legislature to aid us in their extermination.

Mr. Minch, Cumberland.—There is a misunderstanding in regard to this law we have been discussing. I was present last night in the Senate and heard the proposed bill discussed at some length. The

intention of the bill is entirely different from what this Board has supposed; it is to protect the American and not the English sparrow. The bill does not refer to the English sparrow, nor to protect the robin. It makes the robin a game bird.

The Chair.—I do not altogether understand you. Is there an English and an American sparrow? I was not aware that there were two different birds.

Mr. Minch.—I understand that last year when the Board wanted the protection withdrawn from the English sparrow they supposed that the American and English sparrows were the same bird, and that was where the confusion arose. They are two birds, and the law is only referring to the American sparrow and has nothing to do with the present law in regard to the English sparrow.

Mr. Rogers.—There is a great difference between the American sparrow and the English sparrow. The American sparrow is an insectivorous bird. The English sparrow, on the other hand, is not.

The Chair.—I am obliged to you for the information. I was not aware that there was an English and an American sparrow.

Are you ready for the resolution presented by the gentleman from Camden?

Mr. Williams.—That we may protect the robin also?

The Chair.—Is not the robin protected by the law as it now stands without any further action being necessary to secure his protection?

Mr. Williams.—I offer as an amendment to that resolution, that we are opposed to the repeal of the present law, or any portion of it.

The amendment was accepted.

Mr. Haines, Burlington.—I move to refer this resolution back to a committee for explanation, and let them present it at a future session of this Board.

The motion was carried.

The Chair appointed on this committee :

Mr. Burrough, Camden; Mr. Williams, Essex; Mr. Rogers, Essex.

Mr. Haines.—The Executive Committee, in making their report, have referred to another very important matter—a matter that is of importance not only to us, but to all the farmers throughout the United States. The question I refer to is that of the manufacture of oleo-margarine or deceptive butter. Their reason for referring to this so strongly doubtless comes from a very significant fact, and that is that

the manufacture of this spurious article resembling butter is largely on the increase—a business which must pay handsome profits, as is easily shown by the large number of men engaged in it.

The Chair.—I would suggest that this subject would come up properly to-morrow morning, when the subject of dairy farming comes before us for discussion.

The next business on our programme is that of the appointment of the committees. There are two committees—the Committee on Credentials and the Committee on Nominations for Officers. How will you have these committees appointed?

A Member.—By the Chair.

The Chair.—The Chair will appoint as the Committee on Credentials:

Mr. Burrough, Camden; Mr. Lippincott, Burlington; Mr. Williams, Essex.

As a Committee on Officers:

Prof. Cook, New Brunswick; H. I. Budd, Burlington; D. D. Denise, Monmouth.

The next business on our programme will be the reports of County Boards by their delegates, and also State and County Societies.

The State Agricultural Society is first in order. Their Corresponding Secretary, Mr. Quinn, is here.

The Secretary.—Gentlemen, I will be very brief, as this report will appear in our annual report when printed. The State Society for the past year has been very successful—beyond precedent. We had the largest number of entries we ever had, amounting to over 6,000 in the different departments. The attendance was also very large and very gratifying, and the general satisfaction was very good. (See Reports.)

The Chair.—The State Horticultural Society, Mr. Williams.

Mr. Williams.—I have no written report. I will state in a few words that our annual meeting was held in this city on the 29th and 30th of December, with a very large attendance. The meetings were attended with a great deal of interest, and, judging from the remarks heard since and at the time of the meeting, the number of papers read and the topics of interest discussed, these were also of great interest to those present, and I think our report will be exceedingly valuable. We also had a very interesting lecture on pear blight and its prevention. The most important thing in this report, which will

most directly interest every consumer, was the discussion of the necessity of a national system of weights and measures.

The Chair.—I think it would be better to bring it up at a later period.

The committee that was appointed to wait on the Governor and the Legislature has returned and will please report.

Mr. Taylor.—Your committee extended the invitation to the Governor, who regrets that his health and the pressing nature of his duties will prevent his acceptance.

We also extended the invitation to the President of the Senate and to the Speaker of the House.

The Chair.—The Cranberry Growers' Association will be the next to report. Hon. A. J. Rider. (See Reports.)

The Chair.—The next society is the State Grange. (See Reports.)

The Secretary.—The Jersey Red Swine Breeders. (No one present.)

The Chair.—Atlantic County Board. (No response.)

The Chair.—The Egg Harbor City Agricultural Society, Mr. Hoffman. (See Reports.)

The Chair.—This is a very important report, and the industry at Egg Harbor City is also a very important one.

I feel sure that it would be to the benefit of every one to see this wonderful place, this Egg Harbor, which its residents have turned into a veritable garden. It would benefit all of us and every one outside of the Board. It would be not only of interest to you as becoming acquainted with their people, but it is certainly one of the most surprising things to me what they have done with this land. From the barren, sandy land they have made a beautiful and fertile garden; from an unproductive land they have turned it into an immense vineyard, showing what energy can achieve towards reclaiming the immense tracts of "barren lands" or "pines" in the lower part of this State. From being what we used to call barrens or pines, it has bloomed forth as very productive. Every Jersey farmer knows what these lands have been, but I will venture to say that few, if they have not seen them, would believe such a change possible. All this change has been brought about by the use of fertilizers. By their use they have turned it into a garden.

The Secretary.—Burlington county, Mr. Budd. (See Reports.)

The Chair.—Prof. Cook having reason to resign from the Committee on Nominations, I will appoint in his stead Mr. N. W. Parcell, of Union.

The meeting adjourned until 2:30 P. M.

AFTERNOON SESSION.

Convened at 2:45 P. M., in Masonic Hall, Trenton, Hon. Thomas H. Dudley, President, in the chair.

The Chair.—Before proceeding with our business there is a matter which claims our attention, in which I think you are all interested, and that you will agree with me we should notice.

I see on the table below me a large number of very fine exhibits of corn, potatoes and other things. It has been our custom heretofore to appoint a committee to report at a later session. As a matter of course, we have no premiums to offer, but we should take notice of them in some way, and this can best be done by appointing a committee to examine and report on them before the close of our sessions. I only wish there were more of them—that our farmers showed more interest in the sessions of this State Board of Agriculture. I wish they could be induced to make these exhibits larger—that every farmer would bring something and thus swell the exhibit. I would like to see them doubled, trebled and quadrupled, as they might well be were all our members to take the interest in them they should take.

Last year we appointed a committee of three, I will follow the same rule this year and name the following gentlemen to act as a Committee on Exhibits:

Judge Parry, Burlington; Mr. Baldwin, Essex; J. W. Dickinson, Salem.

We did not get through this morning with the call of the counties, but our programme provides that the President's address shall take place at 2:30 and that the paper and discussion on hog cholera shall follow. I think it is best that we follow the programme. This is all the more important because Mr. Lockwood, who is to address you on this subject, will have to leave early, so, with your permission, we will suspend the calling of the counties until the discussion is over.

The first business, therefore, will be the President's address. (See President's address, immediately after the minutes.)

Mr. DeCou, Burlington.—Mr. Chairman, before we go on with this hog cholera, I would like to ask you a question about this India wheat to which you have referred in your address.

The Chair.—I shall be pleased to answer any questions you may put in regard to it.

Mr. DeCou.—I would like to know how these people in India produce this wheat so cheaply. If there are so many people there, even though they raise such large quantities of wheat, it would seem to me as if they must also use immense quantities for home consumption. I think the population is something like 250,000,000, is it not? We can understand why they should have surplus wheat where it is all land and no population, but we cannot understand how they can produce wheat so cheaply there as compared with other lands.

The Chair.—I have been looking into this matter pretty thoroughly, and I will give the gentleman all the information I have been able to obtain upon the subject.

In the first place, the population is about 253,000,000 of people. The larger proportion of these people are miserably poor. Then they live very cheaply, few of them using wheat, the great mass of them living on rice, and you must know they can live very cheaply on rice. Then their clothing is very inexpensive—nothing in fact but one single garment—that is all they wear. The larger proportion of them never taste wheat at all.

Again, the lands in India are just as rich as anywhere else—as they are in the West. There are thousands and millions of acres that have never been cultivated at all. Lands larger in extent than the New England States, the States of New Jersey, New York and Pennsylvania, where there is not a mile of railway or any other system of transportation to the seaboard—no facilities of any kind.

A man can buy immense tracts of land, and when he can hire his labor done for six or seven cents a day, you can see how he can produce wheat to compete with our high-priced land and high-priced labor. He can prepare his land very much cheaper, he can put in his seed very much cheaper than you can put it in, even with your most improved machines.

Suppose you purchase a reaper at a cost of \$150, and the interest, without counting repairs, is \$9 per year, and then the average life of the machine is only about five years, or say that it lasts even a little longer—now you can see how easily they, with their low-priced labor, can compete with us. Take these figures and you will see how they can produce their crops so much cheaper than we can. They can hire men for from five to seven cents a day while you pay many times this and use your high-priced machines, and even then cannot produce your wheat as cheaply as India.

Last year I placed my estimate at ten cents a day, but I have, in conversation with Prof. Watrous, found that this is much too high, as he assures me that the price is never more than seven cents per day. "Why" says he, "I can get thousands of men at five cents a day." When a man can hire labor so cheaply, when he wants no machine except the plow to plow his ground, and the harrow to harrow it, remember he dispenses with all those expensive machines; when he can do all this it is a matter of little wonderment that he can produce wheat cheaply.

These men are paid say five cents a day wages; out of this they also find themselves. Just think of it. [Laughter]. I made a computation based on this five cents a day wages myself and find that what it will cost you for putting in say ten acres of wheat, sowing, reaping, binding and threshing it, will not be less than \$7 an acre, or \$70 for ten acres, at the wages paid in New Jersey, one hundred acres at this rate would cost \$700. I may be mistaken somewhat in these estimates, but I think I am pretty near the mark, as in my early days I was a farmer and I have a little piece of land down in Camden county yet, as the gentleman from Burlington knows.

I have not gone into this subject to provoke political controversy among the farmers, but to open their eyes to what may be looked forward to with certainty. When India can place her wheat on the docks at Liverpool for 70 cents per bushel she can underbid America all the time—we cannot possibly hope to compete with her. Were it not for the protective tariff on wheat, India would even send it here to our own country and underbid us, but this 20 cents per bushel tariff has thus far sufficed to keep it away. However, if we expect to keep this foreign wheat away from our shores we can only do so by increasing this tariff.

Mr. DeCou.—You say they can produce this wheat and deliver it in England for 70 cents a bushel; what can they bring it to us for? how much would it cost in San Francisco or New York?

The Chair.—By way of the Suez canal they could now bring this to us, despite the tariff of 20 cents per bushel, for about \$1 per bushel. Now you can see where the American farmer stands, as compared with the prospects in the near future for the Indian farmer. Remember there are thousands and thousands—yes, millions and millions of acres of the very best farming land in India that have never yet been opened to the world—where there are no transportation facilities

of any kind. When we think of the possibilities of this immense country, as it comes into competition with us with the building of new lines of railroad and the completion of new lines on their water ways—when we think of this, we get some idea of the competition the American farmer may expect from the products of India. I repeat that the only thing we can do to keep their grain out of our country—away from our shores—is to increase the protective tariff on this wheat. I do not mention this, as I said before, to excite a political controversy, but I am merely placing the matter before you in its true light—and I have gone over it very carefully, gentlemen, let me assure you.

Wheat is selling in London to-day—or at last advices, a few days since—wheat was selling in London for 90 cents a bushel. This is Indian wheat; of course, many people say it is not as good as ours—that it does not make as good flour as American wheat; that it does not contain the substance that the American wheat does. I have inquired into this to satisfy myself, and have obtained statements from millers in London in regard to it. They have been very obliging and have given me all possible information. They do not acknowledge that the India wheat contains less substance or makes a poorer quality of flour than our wheat, and they say it compares very favorably with the brands of American and of Russian wheat.

Probably, gentlemen, I am going too far with this, but it is a matter of very great interest to me, and a matter to which I have given considerable thought.

When you find such a man as Mr. Benson—the gentleman with whom I have corresponded, a very excellent and worthy man in every way—when he tells me they sell ten times the amount of India wheat they sell of the American, I can but acknowledge that the India wheat must be very good indeed, or they would not deal in it. I have given up theories long ago, and I have now come down to solid facts—they are the safest. We are all alike in these matters. If I see my friend Mr. Parry selling a new kind of strawberry, and it is meeting with big sales, I make up my mind at once that it must be a good thing, and I want it at once. So it is, gentlemen, with this India wheat—we can see that immense quantities of it are being placed on the English market at prices at which we cannot hope to compete, and we make up our minds it must be of some good, or people would not buy it; in any event it is hurting our foreign trade, and through

the loss of the demand for our wheat in foreign markets it is hurting the sale of our American wheat.

Mr. DeCou.—I am much obliged for the explanation.

The Chair.—The next business on our programme is a paper on hog cholera and other diseases, to be followed by a discussion after the paper of Mr. Lockwood.

I take great pleasure in introducing to this State Board of Agriculture Mr. Lockwood, who has made the subject of hog cholera a very careful study, and who will give us very valuable information. As this disease is growing, not only in this State, but throughout the country, this is a subject of special interest to all of us, I think.

Mr. Lockwood, D.V.S.—I do not propose to go into this matter too deeply, but simply to give you a description of this disease, and the signs by which it may be known in its early stages, so that farmers whose animals are taken with it may be able to see what it is; for the term "hog cholera" as applied to these diseases of the hog is not fully understood, or perhaps not as well understood as it might be by our farmers generally, and it is very likely to convey an erroneous impression.

When a farmer nowadays sees one of his hogs taken with purging, &c., he has an idea that the animal has the hog cholera, but this may not be so, and is very often a mistake.

The disease itself is very likely to settle on and affect the brain, spine, or some one particular organ of the hog. The skin also becomes discolored. No matter what organ is affected, this discolorance of the skin is likely to be present. In hogs of a light color this discolorance may be easily noticed, showing itself in large blotches on the hide of the hog.

In regard to the purging and vomiting of the hog, it is only in the last stages of the disease that this manifests itself. These are the real symptoms of hog cholera, and it is only in the last stages of the disease that they show themselves. It is from these symptoms that the disease takes its name. The disease is also largely affected by the weather, and then hogs may get well, but they generally linger along for a month or so and then die. When first taken they generally continue to eat well and heartily, and there is not much about them that is noticeable. It is not well to stint them while sick, and their diet should be of the very best, and they should have the best possible care. Tincture of belladonna is a good remedy for them.

In administering medicine to a hog, it is well to remember that he is different from other animals, in that you cannot pour it down his throat by elevating his head, because he will choke.

In using the remedies I have prescribed in my paper, it is well for the farmer to use the simplest, as it is impossible for the farmer in the average country districts to procure at his drug store the ingredients for anything at all complicated in this direction.

Mr. Haines.—Would you recommend the use of lime?

Mr. Lockwood.—I would keep lime scattered about in the pen.

In this connection let me say that there is one thing I have found in the treatment of poultry, and that is that poultry affected with the cholera have been known to be entirely cured by the use of a plenty of lime scattered about in their runs and places where they most frequent. I have tried this—I have scattered lime freely all about the yard, and have cured the poultry without using any other medicine at all.

Let me also say that where this has been done with hogs they have not been afflicted with this disease at all. Remember one thing of importance—never be violent with your animals in giving them the necessary treatment for disease—in fact, never be violent with your animals at all. There is more than the medicine to be considered in this connection. Never be violent to any of your animals, under any consideration.

In using the homeopathic medicine referred to in my paper, it is better to do it in the way I have mentioned, always. If I have twenty hogs to dose I mix one hundred drops of the medicine—five drops to each hog—in the pail of swill. Each hog will then have sufficient. Where the preventive treatment is used there is no doubt that the animals can be saved. Where the disease is allowed full sway or allowed to run on, I don't suppose there is anything that will save them. (See paper, "Hog Cholera.")

The Chair.—It is contemplated, according to the programme, that we shall have this matter fully discussed, and I think the matter one that is of vital interest not only to the farmers in this State, but all over the United States.

Mr. Lockwood.—If there is any one here whose hogs have had the disease, and where symptoms have appeared which I have not mentioned here, I shall be glad to hear of them.

I have only been in this business two years, although during the last

year I have had considerable of this disease to treat. I have found many different symptoms even in the same herd of hogs, and in the same pen. Many of them cannot eat; some have the throat swollen; others have other trouble; some have little or no trouble; others again are without appetite and will eat nothing. All the different symptoms I have mentioned I have studied and gone over very carefully.

Mr. Stiles.—Are you certain that this takes effect on the different organs as you have mentioned—on the brain, spine, &c.?

Mr. Lockwood.—Yes, sir.

Mr. Stiles.—Have you discovered the germs from which this disease is said to come?

Mr. Lockwood.—No, sir; we do not know much about it except that it is really a form of blood poisoning. I have had one case of some three or four months' standing in which the blood was completely poisoned.

Judge Holcomb.—I would like to ask the doctor one question. You say lime is a preventive; would not flowers of sulphur be a preventive also, and would this not be a good thing to feed to healthy hogs?

Mr. Lockwood.—If fed flowers of sulphur great care must be exercised to prevent the animal catching cold, as it renders an animal very susceptible. I would also recommend the use of a little carbolic acid, say once or twice a week.

Judge Holcomb.—Suppose a man has thirty or forty hogs, and when feeding them, gives them a pound of sulphur mixed in their feed, would this be injurious to the hogs? Are the doses too large? I know people who have done this and have known them to feed their hogs a pound of sulphur a day before killing. They say that this makes the entrails nice and clean and cleans them out, making them nice and white. I ask this question because I am interested.

Mr. Lockwood.—If the hog is kept warm and dry I do not think it would hurt him. It would hardly harm him so long as he was not too much exposed.

Judge Holcomb.—I have thirty hogs and they were afflicted with hog lice; I took three pounds of sulphur and sprinkled it all over the whole place. When the hogs laid in the straw the sulphur acted and it was good-bye to the hog lice. I have never seen that my hogs have been harmed by this as yet.

Mr. Forsythe, Burlington.—Can you tell us how the disease is

propagated from one hog to another, from one farm to another, or from one herd to another? This is a question that was discussed here last year and different theories were advanced.

Mr. Loekwood.—We suppose it is from some germ in the atmosphere; we cannot tell what is the cause to any degree of certainty or exactness.

Mr. Forsythe.—Dr. Hunt tells me that this germ works along on the ground from place to place and is propagated in this way. Unfortunately I suffered considerably from this disease last year and the year before. I lost, about a year ago, over a thousand dollars worth of hogs, so I have paid for some experience in this line. This disease first broke out south of Pemberton, on a farm belonging to Mr. Butterworth; from there it went to my brother's farm. This was two years ago. That was all there was of it then. In September it broke out again in my neighborhood. It was communicated from the stock of one of my neighbor's to mine. These hogs of his were in a field adjacent to the field where my hogs were. I changed my hogs as soon as I heard his had the disease, but it didn't do any good. my hogs caught it too, and I lost over a thousand dollars worth of fine hogs.

This disease appears to affect some of these hogs in different ways; the hair all comes off of some of them, and of some it don't.

In some of the hogs it attacks them while small, and I have seen it in hogs weighing over 500 pounds. I have seen the hogs cured of the disease and get perfectly sound and grow fat, weighing 500 pounds and more. There would appear to be nothing objectionable about the hog at all after he got over it; I would as willingly take that hog, or the pork from that hog, as from any I ever saw.

Some people claim that when a hog has once had it he is inoculated and will never have it again. Some also claim that if they have pigs after having the disease there is no danger of the pigs ever getting the disease—they are inoculated with it and won't get it because their mothers had it.

I believe the disease is pretty well stamped out in Burlington county now. I don't think I know of a single case.

The question with us is where this disease came from. No one appears to be able to give an explanation. It came from no one knows where, and it has gone back again to the same place. [Laughter.]

The question with regard to the injurious effects of this disease may be various. We all have different opinions on different subjects, but we should all be of one mind as to the question whether or not we have had enough of this hog cholera. I think, myself, at the present prices of pork, we had better have some more hog cholera and less pork, for then we would get something for our pork. [Loud laughter.] Pork at \$4.75 is worse than the hog cholera.

Mr. Lockwood.—The best treatment for this disease is always the preventive treatment. Whether the disease be with the hog, with cattle, the horse, or with the human race, the preventive treatment is always the best. We are satisfied that an ounce of prevention is always better than a pound of cure.

If we will be a little careful in our treatment of the animals we will have but little trouble in either preventing or eradicating the disease as it appears in its incipency. I know of many people who gave the cattle and horses brown mash and carrots all the year through with this idea.

Mr. Forsythe.—When my hogs had this cholera they would die right along every day. So I put them into my sheep-yard and commenced giving them Spanish brown and sulphur. Many of those that were left were sick, some of them pretty bad. All were more or less diseased. I kept pushing the sulphur into them and I didn't lose any more hogs at that time.

The Chair.—Did they all get well?

Mr. Forsythe.—Yes, sir; but I bought \$125 worth of pigs at a sale and I brought them home and had them put in the field where I had buried the hogs that had died of the disease, in the first place; it was in a corn field near the house. I did not think of the young ones being in danger from the disease. They were put into this field, and I lost all the pigs.

Mr. Lockwood.—I know where sulphur was tried and had no effect. I am glad to have heard this from the gentleman.

Mr. Forsythe.—Sulphur is fed largely by our farmers. There are more men in Burlington county who feed sulphur than who don't. They give it for the thumps and all kinds of complaints, and it will often make a cure. There are half the farmers in Burlington county who follow this rule.

The Chair.—In what proportion did you feed the Spanish brown and sulphur?

Mr. Forsythe.—When I put the feed in the trough I put in a tablespoonful to each pig.

Mr. J. W. Pancoast.—I should like to hear an expression of opinion as to how the disease was introduced into the State. In Salem county the farmers believe it was started from hog cheese which they bought. By hog cheese, I mean the scraps from butchering establishments, old meat, refuse and stuff of that kind that cannot be used for any other purpose. This stuff is pressed into cakes and sold as hog cheese, and we farmers in Salem county think the disease must have been introduced in this way. Many of our Salem county farmers buy it and mix it with their hog swill.

Mr. Lockwood.—This is one of the questions which has never been answered as yet [Laughter], and one which never may be.

The Chair.—Dr. Miller is present; can he give us any information upon this subject?

Dr. Miller, Camden.—I do not know that I can give anything more than has already been given to the public. This subject has been quite thoroughly ventilated for several years.

Unfortunately, in our section of the country, we have not been so fortunate in the treatment of this hog cholera, as has the gentleman who has just addressed you, Mr. Lockwood. We have been unable to find any panacea for this dreaded hog cholera. We have gone through the whole vocabulary of remedies without finding any satisfactory results. I have been treating hog cholera for the last six or seven years, and have found nothing thus far that is in any way beneficial except sulphur. I have yet the first case to cure.

I must differ with the gentleman who spoke, in regard to the treatment of the hog cholera and the administering of the medicine. I have given the medicine in bulk, and have had no success with it as yet. I cannot see how it is possible that, in the giving of the medicine to the hog, it may enter his lungs if his head is held back. This is a new theory to me.

Mr. Lockwood.—As a general rule, in giving medicine the head of the animal is held back. In my experience this should not be done with the hog, nor in fact should violence of any kind be used in administering medicine to any animal. A cord is often placed around the nose of the hog, and his head is then thrown back. As you know the hog maintains a constant squealing while he is being held, and it is probably this that causes the objection I have mentioned in regard

to holding back the head of the hog in administering medicine. On account of this constant squealing of the hog while he is being handled I have always cautioned people against it.

Dr. Miller.—I would have inferred from the gentleman's paper that he had had practical experience in that line.

Mr. Lockwood.—No, sir ; I never had.

Dr. Miller.—This is something new and unusual to me, and I am very glad the point has been mentioned ; it is worthy of consideration.

Mr. Haines.—Upon a supposition that an ounce of prevention is better than a pound of cure, I have always acted in this matter, and although there are plenty of men who have raised a great many more hogs, and have fattened a great many more than I have, yet I am willing to give my experience in this matter, as I know it to be practical. It has been my rule during the last two years to always keep on hand a can of sulphur, and this the hogs got in their swill. It is not very easy to mix it, but I put it in the swill and stir it up and trust to Providence to mix it up better. [Laughter.] The fowls get some and the horses are also given some of it. We also give our poultry all the coal ashes ; this is a good thing for them.

Our Grange always keeps a barrel of sulphur in the store, and the farmers are using large quantities of it. So far as I know, our township—Medford township—is entirely clear of all diseases among our cattle, our horses and our swine. I think it well to state this. It is due, we think, to this use of sulphur as a preventive.

In former times we used to raise thirty or forty hogs ; you could take an old sow and she would have ten or twelve pigs. It did not make any difference where or how she was kept. It did not make any difference whether she was kept in a snow bank or in the warmest of pens. We never had any trouble of this kind. Whether there is something in the hogs or in our manner of breeding and keeping them, I don't know ; but then there was no trouble such as we now have.

Dr. Hunt.—I look upon the hog cholera question as a matter of a very serious nature. I will not take up much of your time, but wish to throw out a few points. I do not want you to think that we are idle ; I do not want our farmers to think that there is nothing being done in their interests in this direction, for such supposition is a wrong one.

If you will go to Pasteur's laboratory you will find that there has been just as much done in this direction as in any other—just as much for the hog cholera as for any other disease. If you will go to Washington you will find that this subject has occupied their attention there to a very great extent during the past year. They have experimented with a large number of these animals. They have inoculated large numbers of them. They think they have found the long-sought germ which is the cause of this disease of hog cholera. If not the germ, it is certainly one most directly associated with it. As to the matter of treatment, I would like to look at the practical side of the treatment mentioned. I am glad to hear everything in connection with this treatment of this disease in all its phases. I do not consider this of too little interest, for I have never in my experience passed by the commonest thing, the commonest remedy for disease of any kind. When I find a man who has treated fifty hogs successfully, that result to me is very important, and I am glad to have his experience. We want to find out what will cure or prevent, and if we only find that, we are all right. These matters of interest to you are matters of interest to all of us. If we can refer, as I shall be able to do in the course of a month or two, to the recorded evidence of farmers here, one man telling how he has treated his hogs, and another how he has treated his, the remedies used and such matters of interest, and also telling of the separation of his hogs in their pens, the sick from the well, such information can be but of interest to all of us.

In this connection let me say that separation is not enough; if a man can show me that he has separated his hogs, has made no mistake in the transfer of any pail, using the pail for the well hogs which he has used for the sick, and no mistake in the transfer of any trough, using the sick hogs' trough to feed the well hogs, and has not even allowed the same man to attend them, when he can assure me of this, it will be a matter of interest to me to note the result. Such experiences are valuable to us all.

There is another class of experience we want, and that is that of the men who try different remedies for these diseases, noting the results carefully. I must confess that the remedies of sulphur and sulphite of soda are new and original, but we would like the result of experiments with them.

The addition of Spanish brown I am very much inclined to think

a very important addition. It has the alum and iron in it, which, we all know, are such important disinfectants.

In regard to the transmission of this disease, it is very certain that it travels from one farm and from one herd to another. There are also some very curious things connected with this transmission of the disease. For instance, a board fence has been known to stop the transmission of the disease from one herd to another, while the herd of another neighbor, where there was no protection by a board fence, were taken with it.

I have been given an account of a herd of hogs dying in Cape May county which belonged to the Rio Grande Sugar Works. The hogs were located one and a half miles from any habitation; their pens were in excellent order, and there appeared to be no apparent cause for this outbreak in the herd. I have been looking into this myself and know these are facts.

I found that in shipping forty-five live hogs to market six weeks before one of the hogs got away. Although search was made it was not found for some time, but it was finally found in the woods, and, when the disease broke out among the hogs, this was the first one that died. We investigated this matter carefully for a long time without results, but we finally found that this hog that had broken away had been caught and put in a pen in Salem county, where other hogs had died of the disease. This one hog that got away had thus given the disease to the others.

The surroundings of hogs sick with this disease should be looked to. They should not be allowed to get damp or catch cold, as all these things tend to make the disease more virulent, more malignant. Like small-pox, these diseases are made more virulent by the surroundings. Farmers should endeavor to prevent the disease from coming by proper care and treatment, and if it does come they should use the greatest care to prevent it from spreading. They should take it in hand at once. In the use of sulphur and Spanish brown, and in the proper care of the animals, we have familiar remedies or preventives. Some of our farmers go still further than this and use various drugs, using care that no mistakes be made, and that the doses are not taken by mistake by other animals. These are all matters worthy the attention of our farmers, and we want them also to think that the men who are in charge of our department are doing all they can and are making every effort possible to eradicate the diseases

to which their cattle and horses and swine are subject. While our progress is not as great as it could be wished, we are still making some advance. We have been laboring for many years on the dread diphtheria, yet there are many thousands of people who die every year from this disease. We are not looking so much for specifics as for preventives. It is easier to prevent than to cure a case of sickness. I hope we may be able to control the disease and stop its progress, or entirely eradicate it in time. It is only a few months since it found its way into Morris county, or parts of it, while it has been virulent in some parts of this county for seven years, as Dr. Miller very well knows. They are now pretty thoroughly cleared of it.

For the exhaustion of the disease the best thing to use is the preventive remedy, and that is our plan of procedure now.

I have taken up your time long enough; I only wanted to encourage the gentleman.

Judge Holcomb.—Let me ask you a question. Have you ever tried sulphur for the treatment of diphtheria?

Dr. Hunt.—Sulphur has been tried every way. It is one of the very best remedies known and, like all the best remedies, it is being constantly used.

Dr. Miller.—In my experience with hog cholera I have always, whenever I have been called on to examine the diseased hogs, tried to impress on the farmer the desirability of isolating the hogs, the complete separation of the hogs, the sick from the well. I think Dr. Hunt will bear me out in this. Wherever we have done this it has proven a good thing to do. Unfortunately most men will go to the pen and take out the sick animals and leave the healthy animals in the pen, which is full of the disease—leave them in there to become sick also. In hog cholera this does not answer. Something more must be done than taking out the sick animals and putting them in other pens. The proper plan and the only effective one is to leave the sick animals in the pen where they were and take out the healthy animals and place them in another pen. Where this has been done it has certainly proven beneficial in each and every instance. I think that in all diseases of this nature, and in fact in all diseases, as stated by the gentleman who read the paper and as stated by Dr. Hunt, more can be achieved by prevention than if the disease is allowed to spread to the others and develop in their systems.

Judge Holcomb.—The same remedy will apply to poultry that have the cholera.

Mr. Pancoast.—Can we do nothing to stamp out this disease besides using preventives? Is there no way to prevent its introduction or its spreading? Can not the State take some measures looking towards this? We want to get rid of this hog cholera, and it can only be done by united effort. If the reply is in the affirmative—if the State can do anything for us, I would like very much to hear an expression of this Board of Agriculture as to the advisability of asking the Legislature to take some such action as they have taken to drive out the pleuro-pneumonia in cattle. What can be done?

The Chair.—Will Mr. Hunt let us know about that?

Mr. Hunt.—This is a question for the farmers to decide. The truth in the matter is that the government does not wish to do anything in the matter of paying a subsidy for this disease without it is a foreign disease. Such subsidy would of course enable farmers to get rid of the diseased animals, but the disease is not a foreign disease. When such a disease is thoroughly in the country it is generally the opinion of the government that it is unwise for them to make any such subsidy. If the government should adopt such a policy in connection with the hog cholera, and such policy were thoroughly pursued, it would cost the State an immense amount of money. Whether such action is a wise one, and whether the farmers wish to ask the government to do this, is for them to decide. The cost of such action to the State would be very great—so great that it would hardly be thought advisable. But the day you have thoroughly eradicated this disease, then it would be a wise preventive. As it now has such a strong foothold in the country, it can hardly be considered a foreign disease at this time.

Suppose that you have succeeded in thoroughly eradicating the disease, and the next day a herd of hogs comes here from the West, or from another State, and brings the disease back to you again, would you consider it a wise or an unwise action on the part of the government to pay such subsidy? You will see the difficulty in this matter. If the farmers think it worth while—if they think it is best for the State of New Jersey to pass such a law, then well and good. It is not my wish to argue this point, but merely to point out the distinction. There is a great difference between this disease and those which are indigenous.

Mr. Forsythe.—Here we are discussing this hog cholera question. This is not the most dangerous disease, by any means. The greatest disease is the selling price of \$4.75 per hundred. [Laughter.] This is what caps the whole. We want a remedy that will prevent or cure that. [Laughter.]

The Chair.—We will take up now the unfinished business of this morning—county reports.

The Secretary.—Camden county. [Mr. Haines reads paper.] (See Report.)

The Secretary.—Cumberland county. [Mr. Garrison reads paper.] (See Report.)

The Chair.—How old was that peach tree which you say bore such a wonderful crop, and which is of so large a size?

Mr. Elmer, Cumberland.—Fifty-three years old; it was planted by Uriah Loper in 1823.

Mr. Stiles.—What is the variety?

Mr. Garrison.—I cannot tell you the variety, and I do not know much about the fruit itself.

Mr. Stiles.—What is the location of the tree; on what kind of soil is it?

Mr. Garrison.—This tree stands on a low piece of ground; I don't mean swampy ground, but it is not on high ground.

Mr. Stiles.—Has the tree been fertilized?

Mr. Garrison.—I do not think it has.

Mr. Stiles.—Has the tree been pruned?

Mr. Garrison.—I can't answer that question.

Mr. Stiles.—Has it borne a good crop every year?

Mr. Garrison.—I can't answer that question; I know it has borne immense crops—last year it bore a very large crop.

Mr. Stiles.—How was the fruit as to size and taste?

Mr. Garrison.—The fruit was very nice—large and good peaches. I only know this from reliable report; I have never seen the peach.

The Chair.—Have you ever seen the tree in fruit?

Mr. Garrison.—I never have. At one time I had the fortune or misfortune to have the appointment of county superintendent of schools, and frequently drove past that neighborhood, and have seen the tree very frequently, but the schools not being in session when the tree was in fruit, I never saw it while in fruit.

The Chair.—This is certainly something wonderful, and well worth a visit to see.

Mr. Haines.—That field of oats you referred to in your paper—what kind of land was it raised on?

Mr. Garrison.—It is somewhat swampy. It is as rich a soil as there is on the face of the earth. I do not know how long large crops have been grown there, but it is certainly safe to say that 100 bushels to the acre have been grown on it.

Mr. Elmer.—Right opposite to this field there was grown 100 bushels per acre.

Mr. Haines.—What variety of oats were grown on this land last year?

Mr. Garrison.—I cannot tell you the variety; but it was a black oats; I do not know the name of the variety.

Mr. Haines.—Did you see it?

Mr. Garrison.—I saw it just before harvest; it was the finest field I have ever seen.

Mr. Roberts.—What was the crop of corn referred to?

Mr. Garrison.—One hundred and twenty-five bushels to the acre.

Mr. Roberts.—Estimated or measured?

Mr. Garrison.—By actual measurement. The land was measured by a surveyor.

Mr. Roberts.—How about other crops from this field?

Mr. Garrison.—This same field produced from forty to fifty bushels of wheat to the acre.

The Chair.—Captain John Mickle, a man well known in the southern part of our State, told me we all made mistakes in planting out our peach orchards. He said they should never be planted on high ground. He claimed that meadow land was by far the best.

I think we should take this matter up and experiment with it, with a view to finding out the best location for our peach orchards. Let some of you take up this matter and let us see what the results will be. It is certainly worthy of consideration and experiment, and if nobody else will take the matter up I hope my friend Mr. Parry will do so for the benefit of himself and the State Board of Agriculture. Somebody ought to take it up. Possibly some of you have done so; if so, we would be glad to hear from you.

The Secretary.—Cape May County Board. (No one present.)

Essex county. [Mr. Baldwin reads paper.] (See Reports.)

The Chair.—Gloucester county. [Mr. Gaunt reads paper.] (See Reports.)

The Chair.—Hunterdon county.

Judge Holcomb.—We do not know that we are entitled to make any report.

Mr. Bodine, Hunterdon.—Well, we do.

The Chair.—Mr. Bodine will please read his report.

Mr. Bodine.—I think farmers, as a rule, are afraid to let people know how much money they are making, for fear others may wish to embark in the business; at least that has been my experience in endeavoring to make up some facts and gather some information for this paper. [Laughter.] (See Reports.)

Judge Holcomb.—There are two delegates here from the Hunterdon County Agricultural Society. I am one of them and my friend here is another. We came here with some fruit, corn and other stuff, and we have a report to make if it is wanted. We had expected to add a great deal more to this, but before we proceed any further we would like to know whether we are to be recognized as delegates or not. If not, we will have nothing more to say.

Mr. D. D. Denise.—I move that the whole thing be laid before the Committee on Credentials.

Mr. Burrough.—That is the proper course to take.

The Chair.—One word in explanation: This County Board was organized, I think, in November. We have heard the report of the delegates from this County Board. Last year Judge Holcomb and another gentleman came here as delegates from the Agricultural Association, and they were recognized and treated as delegates.

There now appear to be two sets of delegates from two different Societies. The question now is whether these delegates, Mr. Holcomb and his associate, shall be admitted or not.

I take it for granted, under our State law, enacted as it is, that the gentlemen who have been elected and who have come here as delegates from Hunterdon county are entitled, under that law, to be admitted to their full rights as delegates. I also think that the old delegates that are here ought to be admitted. I think our policy should be to admit all we can get in here of our representative farmers—all our best agriculturists, and not restrict at all. Such is the intent and purpose of the law, and I think these gentlemen should be admitted to their full rights as delegates—members of the State Board of Agriculture.

Let us open our doors and admit rather than restrict. The law

passed last year admits everybody as a member of this board who comes here from any agricultural society, whether it is a County Board or any agricultural society, and they are at liberty to participate in all the proceedings of the meeting. They are eligible to office also. You can make them your President if you wish, or you can make them your Secretary. The only difference is that they do not get their expenses paid while in attendance.

The Secretary.—Before the County Board was formed I had a correspondence with Judge Holcomb, and supposing there was no County Board, was very anxious to get a report on the peach crop from Hunterdon county. I sent Judge Holcomb the blanks to be filled out, and asked him to make up the report I wanted.

He therefore has reason to suppose that he will be heard, and had the right to expect to be heard before the Board, when he was asked by one of its officers to prepare a report on the peach crop of Hunterdon county.

Mr. Rogers.—I move you, sir, that he and his friend be admitted as delegates.

Mr. Burrough.—These credentials have been referred to the Committee on Credentials. It is out of order to take any action on the application of these delegates until this Board has the report of the Committee on Credentials.

I would state that we have four delegates with credentials, asking for admission to membership in the State Board, as directors. We have referred this matter to the Executive Committee. There is no question upon this subject. We are ready to make a partial report on these credentials, whenever you are ready to hear our report.

The Chair.—There has been a motion made that the Chair will recognize, that Mr. Holcomb and Mr. Tine be admitted. The motion made by Mr. Rogers is that the other two—I mean the old delegates—be also admitted. If this motion is seconded, the Chair will be glad to put it.

Mr. Lewis, Cranbury.—Have we a right?

Mr. Taylor.—I think it is a question whether we have a right to pay that many delegates from one county. The law states very explicitly whom we shall pay and accept as delegates.

The Chair.—I have not the law before me. Will some of you gentlemen please look it up?

Mr. Burrough.—I understand the County Board takes precedence over all the societies.

The Secretary [reading from the laws].—And be it enacted, That the members of all agricultural and horticultural societies, farmers' clubs, granges of the Patrons of Husbandry and other agricultural associations, shall constitute the membership of the State Board; provided, however, that no member created by this section shall be eligible to any office in the Board, nor receive any compensation from the State for their services.

Mr. Burrough.—I now call for the reading of section eight, to which this is a supplement.

The Secretary [reading section eight].—And be it enacted, That in any county in which there may be at the same time a county board of agriculture and any other agricultural organization, such board shall have the prior right to representation in the State Board, unless for good cause shown the said State Board or its Executive Committee shall otherwise order.

The Chair.—The Executive Committee has the right to order this for good and sufficient cause.

Under the old law you had only the right to admit one. Now under the law you have the right to admit all, if you so determine. The Chair holds that the motion of Mr. Rogers is in order.

The motion was carried.

Mr. Dye.—I think it is time that the Board took some action as to the length of the reports to be made, so that so much time will not be consumed in reading them to the meeting. I think there should be only a summary made, as we could thus save time for more important matters, and the reports could be published and would be accessible to us through the printed reports.

The Chair.—I think myself it would be much the better thing to do, as we could certainly save a great deal of time that might be used very advantageously in discussing points brought to the notice of the Board.

[Mr. Dye reads paper.] (See Reports.)

The Secretary.—Somerset county—Mr. Potter. (See Reports.)

The Secretary.—Monmouth county. [Mr. Denise reads paper.] (See Reports.)

Mr. Roberts.—I would like to ask the gentleman about that yield of wheat he mentions in his report—the wheat which was sown in April—whether he knows what was the effect of the nitrate of soda on the grass.

Mr. J. H. Denise.—The standing grass is very good. The field has been reseeded now. I cannot say whether it is any better or not. The standing grass at present is very good. I would just say here that I have been very successful in reseeding that way. I have been doing it for three years and a half, and the results have been very good indeed. I sowed the seed and then went over the ground with a small potato harrow, I think the middle of August, or somewhere close to that time.

A Member.—Does the gentleman mean reseeding with grass seed?

Mr. Denise.—Yes, sir; clover as well as timothy.

The Secretary.—We still have five or six counties to hear from; shall we finish them up this evening, or shall we adjourn and finish in the morning?

The Chair.—I will take the pleasure of the Board upon it.

Mr. Stiles.—Before we adjourn I would like to say one word, Mr. President, in regard to the oleomargarine question. I am glad to say that one of the Senators is here with us—a Senator who has prepared a bill which is about to be introduced, and he would like to read it to the Board, if they wish to hear it.

The Secretary.—Would not the gentleman prefer to bring it up to-morrow morning?

Senator McBride, Sussex.—I understand that some action has been taken to-day with reference to this oleomargarine question. I presume there is not a farmer here within the sound of my voice but that has some idea of the deception that is being practiced, not only in the manufacture of oleomargarine, but also in the manufacture of butterine, suine and other articles resembling butter—articles not only injurious to the producer of genuine butter, but to the consumer of the spurious article.

The sale of this oleomargarine compound has hitherto been and still does threaten the destruction of the dairy interests not only of this State, but the entire country, and it is, to my mind, high time that the farmers, as well as other business interests, combined to protect themselves and their customers against the sale of this spurious compound. It is high time our farmers began to open their eyes and to take some effective measures to subdue, so far as we can, the traffic in this oleomargarine and other articles of this kind.

In my own county of Sussex we are largely interested in the dairy products, and I have given this subject a great deal of thought and

study, and have endeavored to draft a bill that shall do away with the traffic in this spurious article, except under certain binding restrictions, certain stringent rules that no one need buy a spurious article of butter unless he does so knowing what he is doing.

I have been in consultation with the man who has been prominent in the legislation on this subject in the State of New York, a man who has been counsel of the New York State Board of Health, and with some of the heavy butter dealers of New York city and Jersey City, and acting in concert we have prepared this bill which I expect to introduce into the Senate to-morrow, and I would ask that this Board—that this assemblage of farmers—call upon their Senators and Assemblymen to aid us in passing this bill, if they have not already done so, and urge them to do all in their power to protect not only the interests of the farmers as producers, but the interests of the consumers as well, for there is no doubt in my mind that this consumption of spurious butter, which is growing so alarmingly, can but result, not only in the total destruction of our dairy interests in this State, but also in the destruction of the health of those who consume the different spurious articles of imitation butter—oleomargarine, butterine, suine, &c.

The Chair.—The subject has not been up to-day any further than this. In the report of the Camden County Board of Agriculture they have presented a number of resolutions, and one of them relates to this question of the manufacture of oleomargarine, and other imitations of butter.

They ask that this Board take some action on the matter at once towards securing appropriate legislation. No further action has as yet been taken by this Board on this subject.

That subject comes up before this Board to-morrow morning at 10 o'clock. Samples of the oleomargarine will be here on exhibition then, along with samples of genuine butter. It will then be proper for this Board to take such action as may be thought best.

There is one thing in this connection which may be explained; our exports of oleomargarine have been much larger than our exports of butter. These exports have amounted to nearly *eight millions of dollars* during the past year.

I mention this merely as a matter of fact for your consideration. I quite agree with the Senator and with the Board of Agriculture from Camden county, that some measure should be adopted promptly,

to prevent the sale of this oleomargarine, butterine, suine and similar imitations of butter to the consumer, for other than what it actually is—an imitation article.

If our people want to buy this stuff they should know what they are buying.

I have brought some oleomargarine with me and will bring it to the meeting to-morrow and will have it here on exhibition, where all may examine it. We will also have a sample of butter and will then see whether we can detect which is the fraud and which the genuine article. I could not detect a difference between it and the best dairy butter, at least not in looks.

Mr. Burrough.—I am very glad the Senator is here, especially so inasmuch as he has the bill which he proposes to introduce in the Senate to-morrow. I think it would aid matters greatly if he would come forward and read the bill.

Senator McBride.—The point, as I understand it, is this—this matter is to be discussed to-morrow morning at 10 o'clock. There are some special matters to be discussed in the Senate to-morrow also at 10 o'clock, and while I should like to be present with you here, I should also be at my place to-morrow in the Senate when these matters come up for discussion. If you could make some arrangements I would be glad to meet you and read the bill over to you, and receive such suggestions as you may think pertinent.

The Chair.—Our meeting is at 10 o'clock. There is nothing to prevent us from assembling here at 9 o'clock to-morrow morning to listen to the reading of this bill which the Senator proposes to place before the Senate.

On motion it was ordered that the Board meet at 9 o'clock to-morrow, Wednesday morning, February 3d, to discuss the oleomargarine question and hear Senator McBride's bill.

Then adjourned to meet in the Assembly Chamber at 8 o'clock.

EVENING SESSION.

Convened in the Assembly Chamber at 8 o'clock, Hon. Thomas H. Dudley, President, in the chair.

The President.—Under the statute organizing the Board of Agriculture the Board is required to meet in the State House at least once

a year, and in order to conform to that act of the Legislature, I call the Board of Agriculture here to-night to order. This is the Board of Agriculture adjourned, although we have invited many of our friends, and especially those of the Legislature, to hear the address which is to take place and which is a part of our proceedings.

At the commencement of the recent war—I mean the war of the Rebellion—there was a gentleman living in the southern part of the State of Pennsylvania, not the interior of the State, who threw all of his power and all of his ability into the Union cause, and whose name became familiar all over the country. And so, when General Lee with his Rebel army invaded Pennsylvania, the first thing he did when he gained a foothold in the State, was to send a detachment of his troops to burn and destroy the printing presses, the barns and buildings—all the buildings on that farm—which was done. This was a stroke which was hailed all over the South with great rejoicings and with jollifications, because General Lee had accomplished this thing, and burned the buildings with the aid of his army.

Since then the gentleman has become a resident of Philadelphia, and now edits one of the leading newspapers there—the *Philadelphia Times*.

We have that gentleman here this evening and he will address you. I refer to Col. Alexander K. McClure. I take great pleasure in introducing to the meeting Col. A. K. McClure.

ADDRESS OF COL. A. K. M'CLURE, ASSEMBLY CHAMBER, TRENTON,
NEW JERSEY, FEBRUARY 2D, 1886, BEFORE THE STATE BOARD
OF AGRICULTURE.

MR. CHAIRMAN AND GENTLEMEN OF THE STATE BOARD OF AGRICULTURE—I need hardly say that one who leads a very busy life would not take the time to inflict a prepared speech upon you, and so I wish simply to give some practical suggestions upon a subject that is of vital interest not only to your community but to every community of the country.

I notice that the State Board of Agriculture of New Jersey adhered to a time-honored custom in selecting a speaker, by making selection of gentlemen who know as little as possible about agriculture. This is one of the common customs of all agricultural societies. It is, perhaps, one that would be more honored in the breach than in the

observance. My own knowledge of farming, except that which I learned when a very small boy, was partly told you by the gentleman who introduced me in such flattering terms. I was for several years a farmer in the southern part of Pennsylvania. The first year I started into farming some several hundred acres of ground, General Patterson's army came and settled upon it—its location being very convenient to water, depots, etc.—and cleaned it out. Then, in 1862, General Stewart came around to my place and conscripted my ten farm horses into his army and took everything that was of value about the place. His friendly visit was followed by that of the Pennsylvania militia, who were not much better in some respects. This was my experience the second year I farmed. The third year, General Lee came along himself with some 60,000 men and again cleaned me out. In 1864, I still obeyed the scriptural injunction to sow that I might reap. I kept on sowing and hoping to reap. In 1864 I got my crops harvested and into my barns, and congratulated myself that I was at last a farmer, having sown and having gathered a crop. Then General McCausland came along and burned my barns, with crops and all together—everything I had harvested.

My farming after that time was done by a gentleman commonly known in our counties as the county sheriff, and I stepped out. Now, gentlemen, this is about all that I know, practically, about farming.

I call to mind a gentleman who was at one time very popular as far south as Texas, also a newspaper man, who wrote a book about farming. But I do not think anybody learned anything about farming from this book. I do not think this gentleman's knowledge of farming was much better than mine. I never heard of but one successful experiment in farming that this man made. I refer to Horace Greeley. The only case of profit ever made by him, that I have heard of, was when he bought pigs at \$1.50 a piece in the spring and sold them in the fall of the year at \$9 apiece. Of course, in this case, he made a profit of \$7.50 on each pig. He said it was true that he fed them \$10 worth of corn each during that time, but that did not make any difference because he did not expect to make any profit on the corn anyhow.

I do not intend to address you to-night on any of the dry points of agriculture, but will simply throw out a few practical remarks and suggestions.

There are few intelligent observers of the industries of the country

who may not see something profitable to the very important industry represented by our agricultural community. And one of the commonest defects—the one thing that has more than all others retarded the progress and the elevation of our agricultural industries—has been this fact, that there has been no class of people in any single industry that has so little studied it and has applied so little intelligence to the acquirement of an understanding of the fundamental principles upon which it must be conducted. We farm very much as our fathers farmed before us. They succeeded; they could make their living. You say their sons could make their living, and their sons' sons have followed after them very largely. This is all wrong, both in theory and in practice. I think that no man can farm successfully in these times, and that no man can do his work thoroughly who does not understand the principles underlying the science which should be applied to farming.

Pardon me, gentlemen, if I state the case in a manner that may appear harsh to you, but I say this to the representative men of the State Agricultural Society of New Jersey, because I think it one of the important things that should be taught; that there is not a single industry in the entire length and breadth of our land whose common-sense principles are so little studied as are those of farming.

That might be regarded by many as an offensive sentiment. It is not used in any such sense. I say it because I think it most important that men should understand it. Everything around our farms has progressed, as a rule, far in advance of the farmer himself, I can remember when a boy, when the sickle was in use; I can remember when the sickle gave place to the cradle, and the cradle gave place to the reaper, and to the reaper was added the binder. I can also remember when the flail gave place to the threshing machine; when the broadcast sower gave place to the drill. There is not a single branch of industry connected with farming that has not advanced with our enlightened age. And while the farmer has seen this progress all around him, seen the results of ingenuity that have enabled him to turn his labor to greater profit, the farmer himself has not progressed, he has not advanced in the intelligent understanding of his important calling. The mechanic must advance. He must understand why he performs his labors; he must understand how he produces results. The farmer as a rule knows that he sows his seed, that he fertilizes his soil, that he gathers his harvests. Tell me how many men

there are in your respective communities who understand that which is within the easy range of intelligent comprehension : who understand the nature of the soil they farm, the qualities they extract from their soil by the growth of their various crops, who understand the qualities of the various fertilizers used, and who understand the kind of fertilizers required to restore the soil in the points in which it is exhausted ?

I do not refer to book or theoretical farming. I mean the plain, common-sense principles which should govern the method of every farmer, Every farmer should understand his soil as the mechanic must understand his machine ; knowing what it is capable of doing and knowing why it does it. Every mechanic must understand his machine, and if he does not we do not consider him a competent man ; we do not employ him longer ; we dispense with his services ; we discharge him. Throughout our agricultural districts it is often simply hap-hazard, and the result is there is a vast amount of labor expended—labor that is not profitable to the farmer and which is simply a hindrance to his prosperity, caused by the want of a common understanding of that which he owns and of that upon which he depends for his livelihood. How many farmers in your immediate neighborhood would look upon me with amazement were I to make the simple statement about plowing the soil deeper—that to plow it deeper would make it dry in wet weather and wet in dry weather ? This is regarded as a contradiction.

I know some men who understand this rule. It is a very plain rule to those who will observe the results of deep plowing. Yet a large proportion of farmers would tell you it was simply an impossibility, and would not be inclined to believe it, but who still might give some credit to it if it was proven to them by actual observation. Some of our farmers have proven this fact, that deep plowing makes the ground wet in dry weather and dry in wet weather. Some of our farmers prove by their daily practice that they do not believe it ; they do not understand and they will not profit by it, Still men of any other industry would be compelled to accept such important knowledge when offered and proven, or they could not advance.

The farmer need not study books ; he need not study science ; he needs simply to understand the things which are about him ; to understand the properties of the soil, which are easily understood ; to understand the beneficent influences which our God has supplied to

us; he needs only to understand how to utilize them, how to economize them.

How many farmers sit down and calculate that the air they breathe is the greatest fertilizer of all—that which God has given them. They will dig and throw up the yellow, unproductive clay. They will see it lie barren and unproductive, nothing growing upon it. By and by they will see some growth starting upon it, this growth being followed by a more luxuriant growth year after year. They do not see that this is caused by the fertilizer which God has given the farmer free of cost; given to the farmer who will simply open his soil to it; simply studying those things which are within his reach, and simply applying them by the most common methods; simply taking his plow and sinking it deep into the earth, turning up the earth which will enrich itself. And when the water comes too plentifully to his fields it will sink into the earth as deep as his plowshare has gone, draining the roots of his crops. And when the drouth comes, the air that possesses the moisture that the earth is denied, will sink down as deep as the earth has been disturbed by his plowshare, and whenever it gets to a depth where the ground is cooler than the air, then it will deposit its moisture. There is nothing in this that the commonest understanding should not master in his boyhood. There is nothing in the application that is difficult. There is nothing pertaining to it that is beyond the ingenuity and the resources of the farmer. All he should do is simply to open his soil to protect it from drouth, to protect it from flood. Let him do this from year to year. Now, is this theory, or is it common sense? There is not one of you who, if he will look around his own farm, can fail to illustrate every one of those propositions. And yet turn around among your own neighbors who live by farming, and how many of them apply these common principles to their daily business? I remember one time seeing a farmer, of at least ordinary intelligence, throw lime upon his straw pile. I stopped him and said, "What is your purpose in doing that; what is your idea?" He said, "I desire to make manure." I said, "You whitewash your corn-crib, your stables, your fences and your other buildings; why do you whitewash your fences and your buildings and your corn-cribs?" He said, "To preserve them." "And you put lime upon that straw to make manure out of it?" I said; "Did you ever have any plaster standing about in your barns?" He answered, "Yes." I said, "What was the result?" He said, "The bottom of the bag dropped

out." I said, "Did you ever consider that if you took plaster and put it upon the barnyard it would have the same effect as it has upon the bag in your barn?" That was an entirely original idea to the gentleman. The plaster would not only decay the straw, but would make the best possible manure in time, but at the same time it would prevent the escape of the most valuable properties which it should retain for plant food.

I know that in our own State of Pennsylvania two-thirds of all the barn-yards are located where the best part of the manure—where two-thirds of the valuable matter is washed away. If a man would prevent the waste of his manure, and throw a little plaster upon it, he would protect every property of value in that manure that the soil most needs. In fact, it is so simple a principle that it is rejected by our farmers because it is so simple. I simply give this illustration to show how very much our agricultural community is behind in appreciating those things which are so applicable to their calling, and the cheapest possible ways which bring the best results.

It is upon these points that agriculturists need information most. It is upon these points that our farmers need to be educated. The farmer should be educated as much as possible; not in the education of books only and in general knowledge, but in the education which pertains to agriculture. It should be of that plain, practical sort, that will make a man earn his living better and easier every day, and bring as large a profit from the same measure of labor. And it is on these points that agricultural societies have their chief duties to perform. Bear in mind, gentlemen, this is one of the most important features of your society. The field is open to you to do a great work.

I know there is a prejudice among farmers against making any changes from their present plan of doing their work. I know there is a prejudice, and not without reason, against what they call book farming, or theoretical farming, or scientific farming. They are not to blame for that. Scientific farmers, as a rule, have never succeeded, and the men who are most refined in their theories about farming are like men of refined theories in everything else, in politics and in law—failures. But the elements of success in any other enterprise are an intelligent, common-sense knowledge of those things which pertain to what belongs to the man's own industry, to the knowledge of his own soil, to the knowledge of his own crops. He must have a knowledge of the crops he grows. He should know what these

crops would extract from the soil. He should know what fertilizers are necessary to put back into his soil the ingredients which have been withdrawn by the previous crops. He should have a common-sense knowledge of the qualities of soil and fertilizers. He should have a common-sense knowledge of the air itself, and everything around him. He should have a knowledge of everything which God has given to advance the prosperity of his calling. These are not wild theories. This is not book farming. This is not attempting to apply science to a plain and indispensable industry. It is simply applying that which is necessary to the success of the farmer; and without this plain, common-sense understanding of his soil, his crops, his manures or fertilizers, the air he breathes, and all the things around him necessary to the success of his crops, he cannot prosper. Now there is one lesson we must learn, and it is a very impressive one. Good farming pays best. I shall not attempt to prove it by any figures; I shall not attempt to prove it by any carefully-prepared theory, but I shall prove it by fact itself, by a fact visible to all, that wherever land has become most valuable in your State, or in my State, or in any State, in any portion of the Union, there farming is most profitable. Go into the garden parts of Pennsylvania, Lancaster county, where farms command a very large price, selling for \$200 an acre or more, purely for farming purposes. There farms are never larger than from sixty to eighty acres, and there is no agricultural community upon this continent that is so thrifty, and so largely multiplies its profits from year to year, where the land is as high as town lots in many of your villages and towns in other States. Now why is this? It is simply because necessity becomes the teacher of the farmer. Simply because he is compelled, in order to make a living upon his farm, to study, in a plain and common-sense way, every possible improvement in the pursuit of his calling. The result is that in all this county of Lancaster there is hardly such a thing as a sheriff's sale of land. Where a man pays \$200 for his farm, and the farm not over sixty to eighty acres in extent, there is no community where the people are so uniformly rich and prosperous.

Study your land carefully and it will not only become more valuable with the improved methods you will use from this very knowledge, but your wealth and your crops will also increase in proportion.

Just as men shall begin to limit the number of acres which they

farm, just so much will they be compelled to study farming, to study the nature of their crops, of their fertilizers, of what fertilizers to use, and when and how to use them. Just as they learn to use the proper fertilizer to replace that in their land which the previous crop has taken away, so will they also understand the wants of their farm, and become successful farmers.

This is not book farming or farming by theory, but it is the plain, common-sense rule, that should apply to every farmer's methods. As they do this, they will advance in knowledge and in prosperity, and so will their farms advance in value.

Slipshod farming cannot pay. The greatest misfortune is that men can live by slipshod farming. In no other calling in life is it possible to do this. The bad blacksmith cannot succeed, because no one will employ him; the bad bricklayer cannot succeed, because his work not being satisfactory no one wants him; the bad machinist can get no employment; but a slipshod farmer can live, and he goes on in the same old rut from year to year.

In all the mechanical pursuits men must thoroughly understand their business or they cannot succeed; but the farmer who can manage to exist, goes on from day to day and from year to year, without regard to the improvements going on all around him.

I am, of course, glad to say that there are many exceptions to this rule, but you must acknowledge that there is only too much truth in the assertions I have made.

The poor farmer goes on from year to year, while the poor bricklayer, the poor blacksmith, the poor machinist, the poor carpenter, cannot hope to succeed, because of the competition and progress going on constantly in these industries.

Now, if I were proposing any new rules about farming, I could understand why farmers should hesitate before accepting them. But there is nothing new in this, not a word. I have not stated a single proposition that any gentleman will here question. This is no fine-spun theory, but simply plain, practical common sense all the way through. It is necessary in any industrial undertaking to understand it thoroughly, in order that it may be prosecuted to success.

Is there any reason why this cannot be taught our farmers? Is there any reason why men, even of the dullest comprehension, cannot understand it? Having simply a little plain, common sense, a man can produce better results than he who goes along from year to year

in the same old ruts. Men who are educated to a knowledge of the requirements of their farms, can grow better crops on less land, keep the land in better order, with less money, and do better in every way.

Let him go on his own farm and see where the water stands and rots the roots of his crops. Let him go where the drouth destroys the vitality of his crops, and there is barrenness.

On the other hand, let him go where the ground has been dug down deep by his plowshare, and there is abundance. It is not at all difficult to illustrate this proposition. Therefore, it is most important that agricultural societies and agricultural organizations, and especially the gentlemen representing the different boards of the different counties of your State, should attempt to teach in some organized way these plain, practical, common-sense principles to those around you who require such instruction.

Even the most listless farmer, when he finds he can get more out of his land, will be certain to compare the old plan with the better and newer one, and we need not fear the results of such comparison. Teaching, to be practical, should be constant. When once a man is brought to see the correctness of his views, he should be the nucleus around which others will be gathered. He should be the fountain through which it should go to every part of your State, teaching men that which they most need and learning them to become practical farmers; teaching men the secrets of their farms—secrets open to all who will experiment and become practical.

As this is an occasion when a man may speak, perhaps, on almost any topic pertaining to agriculture, let me make a few suggestions that I have always taken an opportunity of making when at all proper.

I know that what I am about to say is the case in my own State, and I think it is so in yours—amongst a very large class of intelligent people. I am sure this is the case to perhaps the same extent in New Jersey that it is in other States.

One of the greatest errors of farmers looking to the education and direction of their children, is their failure to make their homes attractive. The very first response of the farmer to a declaration of this kind is the contemptuous remark, "a gentleman farmer." Nothing of the sort. Not in the sense in which he would understand it or use it. But the man that is not a gentleman, whether he be farmer, mechanic, laborer, or what he may, is forgetful of his highest prerog-

ative. It requires him to be honest, courteous and just, and that is the soul of gentility.

I was strongly impressed with this idea of making home beautiful nearly twenty years ago, when I happened to be a sojourner in the far Rocky Mountains, before the surges of civilization had broken in upon Mormonism. For a community whose foundation was based on ambition, lust and greed, it was in many respects one of the most successful industrial communities upon the face of the earth. Around it, upon every side, were the Rocky Mountains, with their eternal caps of snow. Civilization had not then approached them. They were many hundreds of miles away from their eastern neighbors. The song of the iron horse had never been heard there. It was at that time but a little beyond the Father of Waters, and yet everything they needed was made by themselves. Not one cent tribute did they pay to any State or community, and they were happy in the abundance of their own creation. The only thing they asked of civilization being to be let alone—the only thing they asked was that they be shunned by all, and be let alone in the enjoyment of that which they had created and therefore possessed.

In that far-off valley, a thousand miles from the whispers of civilization, there was not a home, however humble, that was not a place of beauty—not one.

It was the command of the arch impostor who ruled that church with a rod of iron, that it should be so, and he was wise. He had brought his followers from the dark pits of the old world, strangers even in a strange land. He had planted them in this valley, and had given them a home, and the command sent forth was that this home must be made a place of beauty, and as far as the eye could see over Utah, every home, however humble, no matter by whom occupied, even the humble adobe cot, was overgrown with flowers and vine, rich in blossom and in the fruits which the family were to enjoy.

It was by the command of one who knew how to make men attached to their homes. He was wise in this.

It was a lesson that our Christian civilization could well profit by—a lesson which should be taught in every community and impressed upon every one, however humble.

Let me ask you how many of your homes are desolate, bereft of every beauty that nature's God has placed within your reach. Around them is often scarcely a trace of the beautiful—bare and barren—

scarcely a shrub or a flower even, and perhaps not a single tree for shade. There is nothing about it to make the child love it as the brightest and most beautiful place on earth, and it is an unpardonable offense that it is so. It is not only a neglect but it is a crime—yes, a crime against your wives and your children; a crime against your household.

The man who raises his children to prove at what little cost it can be done, to show how cheaply a boy can be brought up and thrown upon the world, and who raises his daughter to ignore all the refinement which nature can give, that man commits a crime against his own household gods. Is this not true in your respective communities?

Here and there you will find one of the humblest men you know surrounding his home with all the comforts and beauties he can gather together; a man who lives upon his daily wages, and his wife, with intuitive refinement, is constantly engaged with himself during their leisure in making their home a thing of beauty. It costs no money to do this; no sacrifice of wealth to do this. Without money and with little labor he could make his home a paradise, surrounded with trees and shrubs and flowers.

You will find homes of this kind among the poor and around them you will find men of wealth, of culture, of refinement, who never seem to have given it a thought that the home where their children are born, and where they are expected to live and grow up, should ever be a place of beauty, a place for the children to love, a place that they can look back to with grateful memories after they leave the old home. They do not seem to think it necessary that the home should be a place where their children can sit down in the enjoyment of all the beauties which Heaven intended them to enjoy. These things are forgotten by many people; very largely by the people in our agricultural communities. When this is pressed upon the farmer, his answer is that it requires time and money, that men must have wealth, that they have no time and that they have no money. Why, it requires none. Any man, in less than an hour's rest from a day's toil, could make his home a place of beauty. No man need spend one dollar of money, if he has none to spare, to make his home a place that his children will learn to love as the dearest place upon earth, and in whose minds memories of it will linger throughout all the vicissitudes of life.

It requires that the man, during an evening or noonday's rest, shall

plant a flower, a tree, a shrub. This is all. This will soon make his home attractive. A man should make his home attractive and let his neighbors see that there is beauty around him. He should quicken his sons to the love of beauty and his daughters to refinement. This is home. Children who are thus trained, whether rich or poor, who are taught that home is the most lovely of all places, the most fragrant and delightful, however humble, will carry with them through life the influence of home, and let them go forth whence they will or as they may, no matter how tempest-tossed through life, such children will never lose the beneficent influence of home.

Remember that ours is a government of homes. As the home is to the community, as the community is to the county, as the county is to the State, and as the State to the Union, they are "distinct as the billows, but all one sea."

When you have exhausted theory as to free government, of which we boast so much, all go back at last to the homes of our own land.

I have been away out in the fastnesses of the Rocky Mountains, amongst those who are the pioneers of civilization, peopling the new States which are to shine in the galaxy of the Union, the men who had cast all civilization behind them, and gone in quest, they knew not of what—forgetting every tie and leaving all behind—and there was not one of them whose bronzed face did not light up when speaking of home.

Let no man dream that his children will be forgetful of a beautiful home. If they shall be forgetful it must be because home has been cheerless and desolate; and because parents have been guilty of a crime in permitting it to be so.

I wish to refer to a subject that was mentioned by your President—one that I would seek to impress upon your minds by a few concluding remarks.

There is no community in this broad land so interested in honest government as the farming community. They are the substrata of the whole political foundation of this continent. When they are prosperous the whole nation is prosperous. When they are depressed there must of necessity be depression in every channel of industry and trade. When bad government or misrule press upon us, it falls most heavily upon them, and there is no class of the entire sixty millions of people, in all their diversified pursuits, so honest as to their government and their general habits of life.

And yet how many farmers are there who take this responsibility upon themselves and exercise their right and their prerogative? How many of them who are willing to rise up and smite their own party when it commits a wrong? How many of them dare to do it with a manhood that should be known throughout the land, to the men of every walk in life, of every industry, and even to the government itself? I fear there are few.* They should rise like the sovereigns that they are, for they are the sovereigns, the absolute sovereigns, of the land. They are the men who suffer most, and the men who have the most power to correct the abuses of bad government, but they are men of party and often bow to party interests, in preference to honest administration. Is this not the truth? Your cities are corrupt; Jefferson said a hundred years ago that great cities are great sores, and so they are. And yet they are indispensable to you, and to every interest and class of our people, because they are created by the industries of the land, but I have not known of a wrong in New York, where there is Democratic rule, nor in Philadelphia, where there is Republican rule, that the Democratic or the Republican farmers would resent at the polls. Is not this the truth?

I appeal to you to enter your protests, as representing the agricultural interests of New Jersey. We want honest government, government in its integrity. I appeal to you gentlemen, are these not the words of truth? [Applause].

I wish, indeed, that I could stand before you to-night and tell you that one party was better than another. I would tell you so if I could, but I dare not. [Laughter.] My mouth is stopped by the truth—the truth that you know and all of us know, and which not one man in a thousand dare assert with the manhood of a sovereign, until the very foundations of our government are sapped by misrule; then comes the revolution, sweeping guilty and innocent alike away, when you sit down and let it come again.

Intelligence and integrity are essential to the agricultural interests of this community.

Farmers fail to enforce proper government, and their party knows they can be counted on to assist in the perpetuation of misrule. Party leaders know that the farmers, like others, can be counted on to maintain party supremacy regardless of public interest.

The time has passed when party can stand above integrity. I know your politicians will tell you it is not so; they will tell you that their

party is clean-handed, and the other party is not, but intelligence has grown too rapidly, and the time is near at hand when farmers will feel that they stand high over all of the raging factions of plunder, and they will dare to be honest in enforcing honest government, which they have every interest in maintaining in its integrity. [Applause.] I care not whence political rottenness comes—smite it to the dust. Whenever it shall be known that outside of our cities there is an honest yeomanry that will do this, politicians will be honest; not because they prefer it, but because they must make a virtue of necessity. [Applause.]

The demoralization of war in this, as in every other country, demoralized our politics, and we have been demoralized in power and in government, and have suffered more from it than we have suffered for fifty years before. I do not say that we are worse people than we have been. Do not misunderstand me. The world in all its history was not as great, as good, as Christian as it is to-day. We have lived in the generation that is greatest in all the history of man. We have seen the grandest achievements in both the field and forum, in all that is good as well as in all that is bad.

I have no patience with the man who talks of the demoralization of the times in which we live. We are the greatest, the noblest and the grandest of all the people of the earth. Let us improve, then. Let us make our yeomanry great in their integrity. Let it progress, as the world progresses. Let it stand out against the political corruption in our cities, and while fraud may pursue its deadly course, it may at times be overthrown; but while an honest, intelligent, upright and faithful yeomanry shall keep its eyes steadily upon free government, it will be safe. Let us do this, and generation after generation our children and our children's children will bless us for the most beneficent government ever reared by human hand or blessed by heaven. [Applause.]

The Chair.—As the address of Col. McClure was the chief business upon the programme for this evening—

Mr. Quinn.—Mr. President.

The Chair.—I recognize Mr. Quinn as a member of the Board.
Mr. Quinn.

Mr. Quinn.—As a representative of the State Board of Agriculture, I rise to offer a vote of thanks to Col. McClure, and feel sure that if the farmers of New Jersey will prepare the soil in the way recom-

mended by Mr. McClure, and plant the seeds, at any rate our children's children will be no worse off than we are.

I therefore offer a resolution of thanks for his very able, interesting, instructive, as well as entertaining address before this State Board of Agriculture to-night.

Unanimously adopted.

The Chair.—I beg leave to call your attention to the fact that Senator McBride will be with us in Masonic Hall to-morrow at 9:00 A. M., to read a draft of the bill he is about to offer for the suppression of the sale of oleomargarine, butterine, &c. We would like you all present.

At this hour, 9:20 P. M., the meeting adjourned until to-morrow, Wednesday morning, at 9:00 o'clock.

MORNING SESSION, FEBRUARY 3d, 1886.

Meeting called to order by the President, Hon. Thos. H. Dudley, at 9:15 A. M., in Masonic Hall, Trenton, New Jersey.

The Chair.—The Board will remember that we adjourned until this early hour for the purpose of hearing Senator McBride read the bill which he is about to present to the Senate—the bill in regard to the manufacture and sale of oleomargarine, butterine, suine, and other imitation articles of butter.

Senator McBride.—I will say, before I begin to read this bill to you, that I presume there is not an honest producer of butter or other dairy products in this room, or that there is not an honest consumer of dairy products in the State of New Jersey, but that will aid us in the introduction and passage of a bill that will enable us, so far as possible, to protect the dairy interests in this State; not only the interests of the producer but the interests of the consumer as well; not only the pockets of the producer, but the health of the consumer.

We all know that the manufacture and traffic in these imitations of dairy products has hurt our interests to an alarming extent, and that it bids fair to ruin the dairy interests of the country. [The Senator then read extracts from his bill, which has since been introduced as Senate Bill No. 85.]

A lengthy discussion followed upon various points in the bill.

Mr. Burrough.—I would like to say to Senator McBride before he leaves, that we have here on the table among our exhibits some samples of genuine butter, and also some samples of oleomargarine, and we would be glad to have him examine and compare them.

If he will communicate the fact to the other Senators we should be pleased to have them come in and examine it for themselves. I move that we extend to Mr. McBride a vote of thanks for his kindness in coming here and favoring us with the reading of his bill.

Carried.

Mr. Garrison.—I make a motion that this body recommend the passage of this bill—of the bill read to us by Senator McBride this morning. (This motion was subsequently withdrawn.)

The Chair.—I think you will all agree with me that this is a very important bill, and only a portion of it has been read to us. Do you think we are ready to vote for it when we have not heard all of it? If we pass the motion made by Mr. Garrison we will commit ourselves to the whole bill. Now, do we wish to do this without being sure as to its entire contents?

Mr. Williams.—This is a very important fact. There is a good deal of law in this bill and we have heard only a part of it. It may be well to recommend the passage of that or a similar one.

The bill offered by Senator McBride requires a great deal of work and machinery to operate it.

Mr. Lewis.—If the Legislature will protect the producer and the consumer in this matter, I shall be very glad to vote for the passage of it, but I have never known Legislatures to do that yet.

Mr. Burrough.—I am instructed by the Camden County Board of Agriculture to present to this body the following resolutions. (See Camden county Report.)

Mr. Roberts.—I like the idea of those Camden county resolutions very much for the most part, but I do not like the idea of their recommending that a certain line of action be adopted.

My judgment would be that it would be a great deal better to appoint a discreet committee to watch the legislation and advocate such bills as should be passed, to pay attention to any bills that may be offered, and attempt to shape and mould it to perfection, as nearly as possible. It is impossible for us to formulate this matter to-day and get it in good shape.

Let our legislators take it, and when it is presented, read it care-

fully and study it item by item, and it will thus be brought out in a great deal better shape. They can do this much better than we can, and I think it better for us to appoint a committee.

Mr. Burrough.—I want to say in this connection that there has been an influx of bills on this subject. There are men here now—men who have been here ever since the Legislature convened, and who are staying here day by day—on purpose to protect the oleomargarine interests in this State, and one of their ideas is to get as many bills offered to the Legislature as possible, to watch their progress—the progress of any one bill—and to try to offer amendments to such bills, and when a bill is finally passed, they will have one that will not hold water, so to speak.

Do not let us do anything but express in most emphatic language our contempt for the article itself.

Judge Holcomb.—There is one very important thing which should not be forgotten in this connection, and that is if any one is appointed to look after our farming and dairy interests, we want a farmer at the head of it. We want a farmer at the head as the commissioner.

The Chair.—I presume there is not a person here in this room but who is in favor of the passage of some law to protect the producer of genuine butter.

It is an indisputable fact that this spurious butter is being sold all over the State of New Jersey to-day. I notice that in Pennsylvania they have a very stringent law; they must place with the package a label or ticket telling just what the stuff is.

I have brought here from Philadelphia these samples of oleomargarine. I bought these and took them from the package myself, and there was no mark upon the package to show what it is. I saw the packages myself, and there was nothing on it to indicate what its contents were, or to indicate the contents to be oleomargarine.

There is no question in my mind that a law should be passed regulating the manufacture and sale of this article, and it should be very stringent.

The evil is a great and growing one. All producers are entitled to some protection, as are all consumers.

This is the law in Pennsylvania of which I have spoken before. I know of a gentleman in Philadelphia, a shopkeeper, who is selling this bogus butter, this oleomargarine, but he has no sign to indicate to the consumer that he is doing so. He has nothing to indicate that

he is selling anything but the genuine article. Yet he sold this to me for oleomargarine, and told me that it was oleomargarine.

The Secretary.—I think Mr. Roberts' amendment a very good one. I understand it is his idea to select a committee to watch the bill in all its features. We should all be largely interested in this plan.

Mr. Crane.—I suggest that the subject be deferred until the proper hour arrives.

J. W. Dickinson.—I move you, sir, that we suspend the reading of the reports by counties, and that delegates be directed to hand over their papers to the Secretary.

Carried.

The Chair.—We will therefore dispense with the reading of the reports from the rest of the counties, if there is no objection to such action, and they will be printed in their proper place.

The business of the morning is, first, a paper entitled "Dairy Interests," by John I. Carter, of Chester county, Pa.

The Secretary.—I have a letter from Mr. Carter, regretting that indisposition prevents his being with us.

The Chair.—The whole subject of the dairy interest then is before you without Mr. Carter. The Board will be pleased to hear any person on this subject.

I desire to call your attention to what we have here on the table before us.

Mr. Burrough has brought us some genuine butter; I have brought three specimens of oleomargarine which I got in Philadelphia. The butter brought by Mr. Burrough is from one of the very best dairies in the country.

Mr. Burrough.—The Committee on Credentials would like to make a report if the Board is ready to hear it.

The Chair.—That is a privileged question and the Chair rules that they can be heard if they so desire.

Mr. Burrough.—We find the following associations, county boards, granges, etc., have reported by the following delegates:

DELEGATE.	SOCIETY.
Hon. THOS. H. DUDLEY.....	State Agricultural Society.
Hon. P. T. QUINN.....	State Agricultural Society.
WM. R. WARD.....	State Horticultural Society.
E. WILLIAMS.....	State Horticultural Society.
RICHMAN COLES	State Grange, Patrons of Husbandry.
THOMAS T. KINNEY.....	Geological Survey.

DELEGATE.

SOCIETY.

CHAS. E. ELMER.....	Geological Survey.
JOHN DE MOTT.....	Board of Visitors to Agricultural College.
WILLIAM PARRY.....	Board of Visitors to Agricultural College.
ISAAC L. SMALLEY.....	Board of Visitors to Agricultural College.
WM. S. TAYLOR.....	Experiment Station.
GEO. H. COOK.....	Experiment Station.
V. P. HOFMANN.....	Atlantic County Board of Agriculture.
H. I. BUDD.....	Burlington County Board of Agriculture.
JAS. LIPPINCOTT.....	Burlington County Board of Agriculture.
DAVID T. HAINES.....	Burlington County Pomona Grange.
EDMUND COOK.....	Burlington County Pomona Grange.
HON. EDWARD BURROUGH.....	Camden County Board of Agriculture.
EDW. S. HUSTEN.....	Camden County Board of Agriculture.
MORRIS BACON.....	Cumberland County Board of Agriculture.
W. O. GARRISON.....	Cumberland County Board of Agriculture.
ISAAC S. CRANE.....	Essex County Board of Agriculture.
AUSTEN E. HEDDEN.....	Essex County Board of Agriculture.
GEORGE H. GAUNTT.....	Gloucester County Board of Agriculture.
F. B. RIDGWAY.....	Gloucester County Board of Agriculture.
THOS. BORTON.....	Gloucester County Pomona Grange.
DAVID S. ADAMS.....	Gloucester County Pomona Grange.
JOHN T. COX.....	Hunterdon County Pomona Grange.
ISAAC H. HOFFMAN.....	Hunterdon County Pomona Grange.
F. S. HOLCOMB.....	Hunterdon County Agricultural Society.
BENJ. E. FINE.....	Hunterdon County Agricultural Society.
HENRY F. BODINE.....	Hunterdon County Board of Agriculture.
FRANKLIN DYE.....	Mercer County Board of Agriculture.
H. E. HALE.....	Mercer County Board of Agriculture.
THEO. CUBBERLEY.....	Mercer County Pomona Grange.
W. D. VANPELT.....	Mercer County Pomona Grange.
D. C. LEWIS.....	Middlesex County Board of Agriculture.
J. M. WHITE.....	Middlesex County Board of Agriculture.
D. D. DENISE.....	Monmouth County Board of Agriculture.
D. A. VANDERVEER.....	Monmouth County Board of Agriculture.
J. W. DICKINSON.....	Salem County Board of Agriculture.
ROBERT HEWITT.....	Salem County Board of Agriculture.
M. D. DICKINSON.....	Salem County Pomona Grange.
E. L. BORTON.....	Salem County Pomona Grange.
WM. S. POTTER.....	Somerset County Board of Agriculture.
N. W. PARCELL.....	Union County Board of Agriculture.
DENNIS C. CRANE.....	Union County Board of Agriculture.

EDWARD BURROUGH, }
 E. WILLIAMS, } *Committee.*
 ——— ROGERS, }

These gentlemen are entitled to their expenses in attending this State Board of Agriculture to be paid by the State.

On motion the report was received and adopted.

Mr. Roberts.—There is one matter I would like to speak about. There are a number of gentlemen here who feel a delicacy in talking upon any question brought up in the proceedings, feeling that as they are not delegates to the State Board they are not entitled to the privilege of the floor.

If I am correctly informed any farmer here has the right to speak on any business before the Board. I know there are quite a number of gentlemen here who are not delegates, and who would like to make remarks upon the questions brought before the State Board if they may be allowed, even though they are not delegates.

I only want to call your attention to the fact that all may feel at liberty to speak upon any question if they so choose.

The Chair.—As a matter of course the Board of Agriculture is a corporation incorporated by the State. As the Chair understands the State law it provides for the election of certain gentlemen as delegates to this Board. These persons have the right to have their expenses paid on coming here. The law also recognizes other members of the Board. Any person belonging to any agricultural society, or association, or grange, has a perfect right to come upon this platform and speak upon any question brought before the State Board of Agriculture. Any such gentlemen may be elected as officers of this Board.

I only hope that every one here present will feel himself at liberty to participate in the proceedings of the State Board. You should all feel at liberty to do this. It is by coming here where we are all to be instructed in that which is most necessary to our success as farmers. I would like to see every respectable farmer in the State come here and take part in the proceedings of this State Board. It is only by meeting together and comparing views that we are enabled to educate and instruct in agriculture.

The Board will now continue the oleomargarine question.

Mr. Roberts.—I move that a committee of five be appointed, including the Chairman, to whom the whole matter be referred.

The Committee appointed are :

Mr. Roberts, Burlington; Mr. Dudley, Camden; Mr. Crane, Essex; Mr. Burrough, Camden; Mr. Taylor, Burlington.

Mr. Burrough.—I move that the resolutions offered from Camden be referred to this committee for their action.

"The work of the Experiment Station," by Prof. Cook, was the next topic brought before the meeting.

(As this is given in full in the "Annual Report of the New Jersey Agricultural Experiment Station," it is deemed unnecessary to reprint it here, and the reader is referred to that document for an account of the work the Station has carried on during the year 1885.)

The Chair.—Is the Nominating Committee ready to report?

Mr. H. I. Budd.—We are sorry to report that we cannot agree, and we beg to be discharged.

On motion, the committee was discharged, and a new committee, consisting of one from each county represented in the State Board, was appointed, each county appointing its own committee member from its delegates, as follows:

Atlantic, Mr. Hoffman; Burlington, James Lippincott; Camden, Joseph Hollingshead; Cumberland, Morris Bacon; Essex, J. H. Baldwin; Gloucester, Geo. H. Gauntt; Hunterdon, John T. Cox; Mercer, Ralph Ege; Monmouth, D. D. Denise; Middlesex, J. M. White; Salem, J. W. Dickinson; Somerset, Mr. DeMott; Union, N. W. Parcell.

The Chair.—As Prof. Atwater will be here this afternoon to address you on the subject of "Fertilizers," and as his address will be a very able and interesting one to us all, I think it would be well to adjourn to an earlier hour.

On motion, to adjourn until 2 P. M.

AFTERNOON SESSION.

TRENTON, N. J., February 4th, 1886.

Meeting called to order at 2:15 P. M., by the President, Hon. Thomas H. Dudley.

The Chair.—The first business will be the report of the Committee on the Nomination of Officers.

Mr. Baldwin, Essex.—Your committee beg leave to report as follows:

PRESIDENT.

EDWARD BURROUGH.....Camden.

VICE PRESIDENT.

W. M. R. WARD.....Essex.

SECRETARY.

W. M. S. TAYLOR.....Burlington.

TREASURER.

FRANKLIN DYE.....Mercer.

EXECUTIVE COMMITTEE.

GEORGE H. COOK.....Middlesex.

D. D. DENISE.....Monmouth.

MORRIS BACON.....Cumberland.

Mr. Williams.—I believe the law does not provide any particular method of election. I, therefore, move you, sir, that these officers be elected unanimously.

Motion carried.

All the foregoing officers unanimously elected.

The Chair.—Mr. Parry and Mr. Baldwin will please escort the gentleman to the chair.

Mr. Burrough is escorted to the chair by the committee.

Mr. Parry.—We have the pleasure of introducing to you the Hon. Edward Burrough, of Camden county, who has been unanimously elected as President of this organization.

Mr. Burrough.—Gentlemen of the State Board of Agriculture, there is not a member present who could have been more surprised than he who is now addressing you, at the nomination of the committee. Had I as much confidence in myself as the committee appears to have had in me, I would have no hesitation in accepting the nomination.

I am not insensible of the honor extended me by the committee. I have been a farmer from my boyhood, and always expect to be interested in agricultural pursuits. I have thought it right to lend a helping hand to my fellow-agriculturists, no matter to what calling I might be chosen. I must take a little exception to what the honorable gentleman to whom you listened last evening said to you in his address. If he says the farmers of New Jersey are not as intelligent as other classes in the knowledge of their industry, I beg to differ with him. I recognize in the farming community of New Jersey an advanced intelligence. We have the granaries of the West in competi-

tion with us in cereals ; we have the early vegetable products of the South, and the States south of Mason and Dixon's line in our small fruit products to contend with. Our dairy products come in competition with those of New York State. We have competition everywhere except, perhaps, from the New England States. We have demonstrated that we are not only able to meet this competition, but also to run our farms properly and maintain an existence in spite of cheap railroads and the competition of the whole United States ; and I repeat that there is no body of farmers possessed of a greater amount of intelligence in practical agriculture than the farmers of New Jersey. By your action to-day you have advanced me from the ranks, and it remains for you to continue your work ; you have placed me where I cannot do you much good, although it shall be my pleasure to serve you to the extent of my ability. I hope you will bear with me. With these few remarks I accept the position you have tendered me, with the understanding that it is the object to continue the work we have been doing and still further advance the standard of New Jersey's agriculture.

The Chair.—I have a new pleasure for you—to introduce to you the new Secretary, Mr. William S. Taylor, of Burlington.

Mr. Taylor.—It is hardly in order for the Secretary to make a speech, besides, I did not come prepared. This is a surprise to me. I trust I may be able to serve you to your satisfaction. The office has been ably filled by Mr. Quinn, and it will be my endeavor to attain an equal proficiency and skill in its management. I thank you for the honor.

Mr. Parry.—The committee appointed to report on the exhibits on the tables before you, are now ready to submit their report.

The Chair.—If there is no objection, we will hear the report of the committee.

Mr. Parry.—Judge Holcomb exhibits seven varieties of corn, large, fine-formed ears ; two samples of oats, very fine—the Welcome and the Schoenon. Also a sample of shellbark, large and handsome ; also sample of walnuts. We would recommend that more attention be paid to the growing of this class of trees. He also exhibits samples of butternuts, Mediterranean wheat, clover and timothy seed, Silver Hull buckwheat, two varieties of winter apples—the Pippin and the Russett—all large and fair. The whole exhibit is a very creditable

one in every respect, and we think it would be well were all the members of the State Board to make similar exhibits.

E. Cook, of Burlington county, exhibits samples of Golden Dent corn, very large, bright and handsome ears, making a very nice exhibit.

Aug. Vandervere, of Manalapan, exhibits three varieties of corn—the Large Yellow Dent, Large White Dent and the Queen of the Prairie; very fine ears and very creditable exhibits.

Joseph B. Roe, of Gloucester county, exhibits a basket of very large and handsome yellow sweet potatoes. The strange part of this is that these have been grown entirely without stable manure, or manure of any kind other than fertilizer, about 1,000 pounds per acre—Mapes' being used. This fertilizer was scattered in the row; the potatoes were planted June 1st, and yielded 560 baskets to the acre. A very creditable exhibit.

J. M. White, of New Brunswick, exhibits samples of Bellflower apples, very fine looking fruit, and three varieties of fine potatoes—Early Ohio, Beauty of Hebron, and Early Rose.

F. Dye, Mercer, exhibits seventeen varieties of very fine potatoes, grown by different kinds of fertilizers—Early Hebron, Vanguard, Early Rose, State of Maine, St. Patrick, Rosy Morn, Garfield, Dakota Red, Blush, Pearl of Savoy, White Star, Lees' Favorite, White Elephant, Early Ohio, Late Hebron, Burbank, and No Name.

One can of canned peaches also exhibited—exhibitor not named.

Very creditable samples of dairy butter, and samples of oleomargarine are also exhibited on the table.

Thomas J. Bean exhibits a fine sample of the Ben Davis apple.

In this connection we would like to say that the varieties of potatoes exhibited by Mr. Dye were grown with five different samples or kinds of fertilizers—Smith's, Taylor's, Baker's, Ralston's, and home-made. These were all made at an equal cost per acre, using about 800 pounds to the acre. The yield was about the same with each kind of fertilizer used.

Those planted April 25th were seriously injured by the wire worm and scab; those planted on May 10th were almost entirely clear from blight.

The heaviest yielders were the varieties known as the State of Maine, Early Rose, Late Hebron.

The earliest were the Early Ohio, Pearl of Savoy, Early Hebron, Early Rose.

The finest and most vigorous were the Blush, Rosy Morn, State of Maine, Late Hebron and St. Patrick.

Mr. Eli Minch, of Shiloh, N. J., exhibits three varieties of potatoes, all fine and good-looking specimens—the Early Rose, an unknown variety which he suggests shall be called the Silver Lake, and another variety which was grown for Magnum Bonum, but which do not show the characteristics of that variety.

This gentleman also exhibits a specimen of an annual growth on the ends of the limb of a four-year-old peach tree, showing a new growth of three feet and six inches of wood, very strong and healthy, nearly one inch in diameter, grown by the liberal use of kainit and fine bone. Where the tree now grows so vigorously was formerly, before the use of the special fertilizer, so unfavorable to the growth of the peach that they always died before fruiting, by that so-called disease, the yellows.

Also exhibited by the same gentleman, from the same soil, a bough showing the sign of growth from the same fertilizer, with the addition of nitrate of soda.

The second specimen shows an annual growth of over three feet, well boughed and stout and vigorous.

These specimens show the value and the effect of the use of fertilizers in peach growing on unfavorable soils by the use of special fertilizers.

If such growth can be made as the exhibits show, the peach can be successfully grown on soils and in situations that have heretofore been deemed unprofitable for peach growing, and also opens up a wide area for peach growing.

Your committee can but speak highly of the exhibits before us, and we only regret that more of the same kind of interest is not taken by other members of this State Board.

Let us another year have fuller and larger exhibits even than these.

Signed,

WILLIAM PARRY, J. H. BALDWIN, J. W. DICKINSON,	}	<i>Committee.</i>
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On motion, report adopted.

The Chair.—The Chair would like to say in this connection that, while a member of the Executive Committee, he feels personally under obligations to the gentlemen from Camden and Burlington counties

for bringing forward samples of genuine dairy butter. They are from the best of stock, and enable you to compare them with samples of oleomargarine, which I have brought. I should like this committee to amend their report so as to thank these gentlemen for their exhibits.

Mr. Rogers.—The Committee on the Bird Law reports as follows :

WHEREAS, It has been made known to this Board that there are two bills now before the Legislature, tending to restore protection to the bird commonly known as the English sparrow, and to declare the familiar red breast, known as the robin, to be a game bird by depriving it of the protection now afforded by the insectivorous bird law ; therefore,

Resolved, That we hereby renew our protest against any legislation whatever that will serve in any way to protect the bird familiarly known as the English sparrow.

Resolved, That we also protest against any legislation tending in any way to declare the robin, or any other insectivorous bird, a game bird, and thus deprive it from the protection now offered by the insectivorous bird laws.

The Chair.—You have heard the report of the Committee on Bird Law. What is your pleasure ?

Mr. Roberts.—I move that the Executive Committee of this body cause this resolution to be presented to the Legislature by the President of the Senate and the Speaker of the House.

On motion, the report as amended is accepted.

Mr. Baldwin.—I move you, sir, that a vote of thanks be extended to President Dudley and Secretary Quinn, for the very faithful and capable manner in which they have discharged the duties of their office.

Motion carried unanimously.

The Chair.—We have with us to-day Prof. Atwater, of Middletown, Connecticut, a gentleman of whom you have all heard and who needs no introduction. I have the pleasure of introducing to you Prof. Atwater, who will now address you. (See Prof. Atwater's address, following these minutes.)

Mr. Dye.—I have an invitation to extend to the State Board to attend the meeting of the Mercer County Board. If you are in Trenton on the days we meet, drop in the Court House ; we will be glad to see you. We meet on the fourth Tuesday of this month. The meetings of the Mercer County Board of Agriculture are held on the second Tuesdays of June and August, and on the fourth

Tuesdays of February and November, and the members of other County Boards and of the State Board are cordially invited to meet us at any of our meetings. We expect to have a very able address also.

Mr. Ward.—I have a resolution to offer—a resolution prepared with regard to a national system of weights and measures. I simply desire that this be referred to the Executive Committee of the State Board of Agriculture, with the desire that they take such proper steps as to have the matter brought before the proper authorities.

With our constantly and rapidly increasing State commerce in fruits and other products of the soil, the necessity of having a national standard of weights and measures, to be enforced throughout the Union, becomes more and more apparent. In the first place we need a standard barrel and half-barrel for measuring and shipping apples, pears, potatoes, onions, &c., for, as it is now, a person contracting for a certain number of barrels of produce may receive a very different quantity from what he expected and paid for. It is also quite common to ship potatoes, onions, &c., in bulk or bags, and on arrival in market to sell them by the barrel. Let a standard of weights be fixed for these articles for a barrel and bushel.

A miller is bound by law to give 196 pounds of flour to a barrel. Why should not the growers and dealers in fruits and produce be compelled to give a stated quantity also?

The shipping of fruits and vegetables in crates and boxes has become a custom which has a tendency to foster frauds, on account of the absence of all law regulating their size, and I know of no better way to control this point than to confine all sales to the national standard of cubic inches to the bushel, and the sixteen and eight quart fractions, with the single exception of oranges and lemons.

Two varieties of berries, which are shipped in boxes and are cursed with this cheating process worse than any other articles, are the cranberry and the huckleberry.

In Massachusetts a law was prepared for the benefit of the cranberry growers, defining a bushel of this fruit to be 32 quarts, level measure, and a barrel must contain 100 quarts, level measure. No dimensions were given for a box or barrel to contain this quantity, and the result is, we find, that there are put on the market four sizes of boxes, each of them claiming to contain the legal quantity, yet they differ in capacity 198 cubic inches, or three quarts.

The New Jersey Legislature passed a law defining the number of cubic inches a box or barrel must contain of these berries, but it had no force outside of the State, so the growers shipped in any size boxes they saw fit. A New Jersey standard box contains 2,211 cubic inches, or a trifle more than the legal standard, which is 2,150.42 for a bushel.

The head of a New Jersey standard box is twelve inches long by eight and three-eighths inches wide. A difference of a half inch in the width of the box will make a difference of two quarts in the quantity of the fruit, yet but few purchasers would detect the difference in the haste of buying, so one can see the necessity of compelling all to use the same measure.

In the early history of marketing huckleberries a successful effort was made to use one shipping box, to contain sixteen quarts. For years this plan worked well and pleased both shippers and purchasers, but in time they began to cut down the size of the box until now, when, perhaps, there is no line of fruit sent to our market the sale of which is carried on so dishonestly as this, for many of these boxes do not contain more than eight quarts.

There seems to be a radical defect in our wood measures, for we find that some States ignore them, to a certain extent, by passing laws that a bushel of a certain grain must weigh a given number of pounds. In this instance the size of the measure is ignored and weight substituted. Now, if weight is to be the standard, why not give a national weight instead of States giving separate and distinct ones? The United States determines the number of cubic inches to make a measure to be known as a bushel, but States ignore it. Does this disposition to override the national laws develop patriotism or only selfishness, and if a State has the right to ignore the national law of measure, has it not the right to ignore all others? The selling of our native nuts should also be regulated by law, confining their sales to the weight.

I have made a single exception to boxes in favor of those used by the Florida fruit growers to pack their oranges and lemons in. The growers of these fruits deserve honorable mention, for they mark the number the box contains on one end, so that the purchaser can see at once how many he buys.

The entire system of making baskets for the shipping of fruits needs a revision, and the passing of a stringent law governing their

size, which should be confined to the sixteen and eight quart level full legal measure, with the exception of berry baskets, which should be confined to the quart, pint and half pint, level measure; then we will have all the sizes we need for trade or profit.

Suppose one buys a barrel of apples, potatoes or onions, expecting to receive one of the flour barrel size, but instead receives one which contains only two and one-third bushels, instead of two and three-quarters bushels, what redress has he by law? None. He receives just what he bought—a barrel, that means nothing but a number of staves bound together with hoops, and having heads at the ends.

The same can be said when one buys a basket of any of these articles; the dealer has the privilege of cheating the consumer all he can, and how thoroughly these sidewalk dealers and licensed vendors understand this when they offer the thin, gaunt baskets, or the one-third quart cup for a pint and the reverse end for a half pint.

When the consumer buys a barrel of flour and finds it deficient in weight, or sugar, tea, or coffee, he can get immediate redress through the law. Why should he not be entitled to equal redress when he is defrauded in purchasing fruits? But he is not.

The commission merchant who is desirous of protecting a grower who ships honest packages cannot always do it, for if one man sends him a box of berries containing thirty-two quarts, and his neighbor sends one holding only twenty-eight quarts, he is expected to aid the one who cheats in measure by returning him the same price for twenty-eight quarts that the other received for the thirty-two quarts. If he does not he will not make him the second shipment, but try another who will.

The retailers who wish to deal honestly are compelled to meet in competition dishonest men who cheat in every form they can to make money, and the entire trade in fruits and produce is open to their operations.

There is hardly a subject that deserves more careful consideration than this, the establishment of standard measures. For the want of such laws our fruit growers and farmers have been defrauded of millions of dollars, and it is high time that this matter should be agitated by all Agricultural Societies throughout the land. Let our Society be the one to start it.

The resolution to refer to the Executive Committee was adopted.

Mr. Haines, Camden.—I have a resolution to offer. I do not

think that the present manner of offering premiums is fully satisfactory, because I do not think the people receive the full benefit of the money expended by the State.

I think the State Premium Committee should try to adopt some different plan of giving these out, so that the people of the State should know how the results for which the premiums are given are produced. I therefore offer the following resolution as recommended by our County Board.

(See resolution No. 2, Camden County Report.)

On motion, the resolutions were referred to the Committee on State Premiums.

The Secretary read the memorials as offered by Burlington County Board.

On motion, they were received, indorsed by this State Board of Agriculture, and directed to be forwarded to our Senators and Representatives in Congress.

The Chair.—I will announce the State Premium Committee, as follows :

T. F. Baker, Cumberland; P. T. Quinn, Essex; F. S. Holcomb, Hunterdon.

President Burrough (Mr. Ward takes chair.)—There has been a paper presented to the Executive Committee, which, I presume, is among the papers referred to us for future action. I would like to offer the following resolution :

WHEREAS, The history of the Duroc Jersey Red Swine, as presented to this Board by Col. F. D. Curtis, clearly defines the origin of the Duroc swine to be separate and distinct from the Jersey Red swine, of this State, now so widely and favorable known; therefore,

Resolved, That the thanks of this Board be and are hereby tendered to Col. F. D. Curtis for his paper on the Duroc Jersey swine; and

Resolved, That from the best information to be obtained by this Board, the Duroc Jersey Red swine are not the true Jersey Red swine of this State; and

Resolved, That we hereby respectfully, but earnestly, call upon the Duroc Jersey Swine Association to strike out and eliminate the word "Jersey" from their records, thereby avoiding any confounding of the two breeds by the different swine breeders' associations.

On motion, resolution adopted.

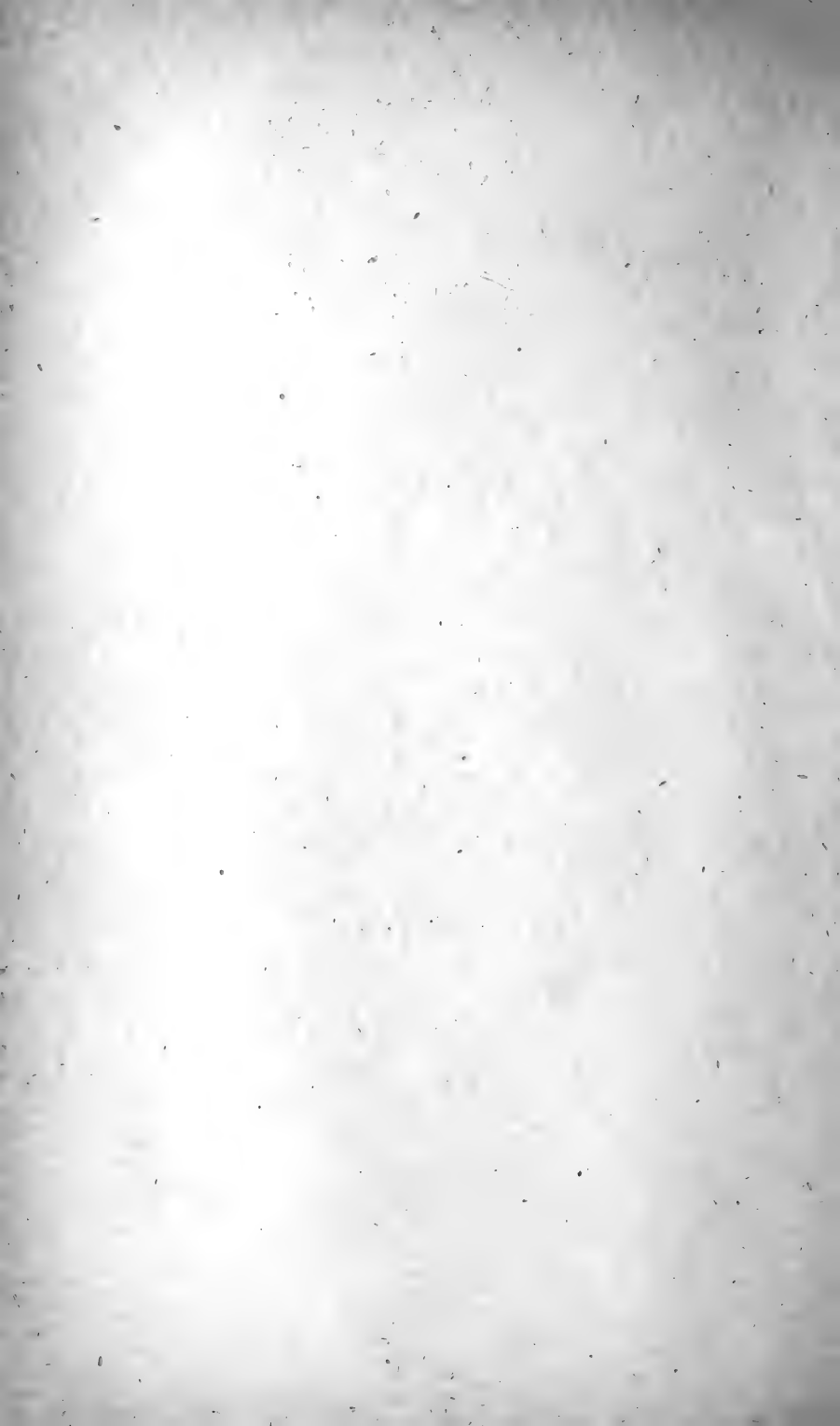
The Chair.—Before we adjourn, the Chair would like to impress upon the members of the Board the necessity of a close attention to

the work in the County Boards. This is very important. We must do all we can to create these County Boards and to encourage them. Each County Board should do what it can to help the work along, and it should also be represented at the meetings of the State Board. It should also bring or send a synopsis to this Board of the work of the year just passed.

I trust that our meeting next year will see a County Board in every county of the State. You will in this way reap the benefits of this organization, and it is a matter of the utmost importance.

We shall never be in full working order until the counties are all organized. You must get to work, and work to achieve this end. Do not fail to attend the meetings of your County Boards. Make your county meetings interesting and you will have the whole county attending them after awhile. Attend the meetings of the State Board also, and make this meeting interesting to all.

At this point the meeting adjourned.



President's Annual Address,

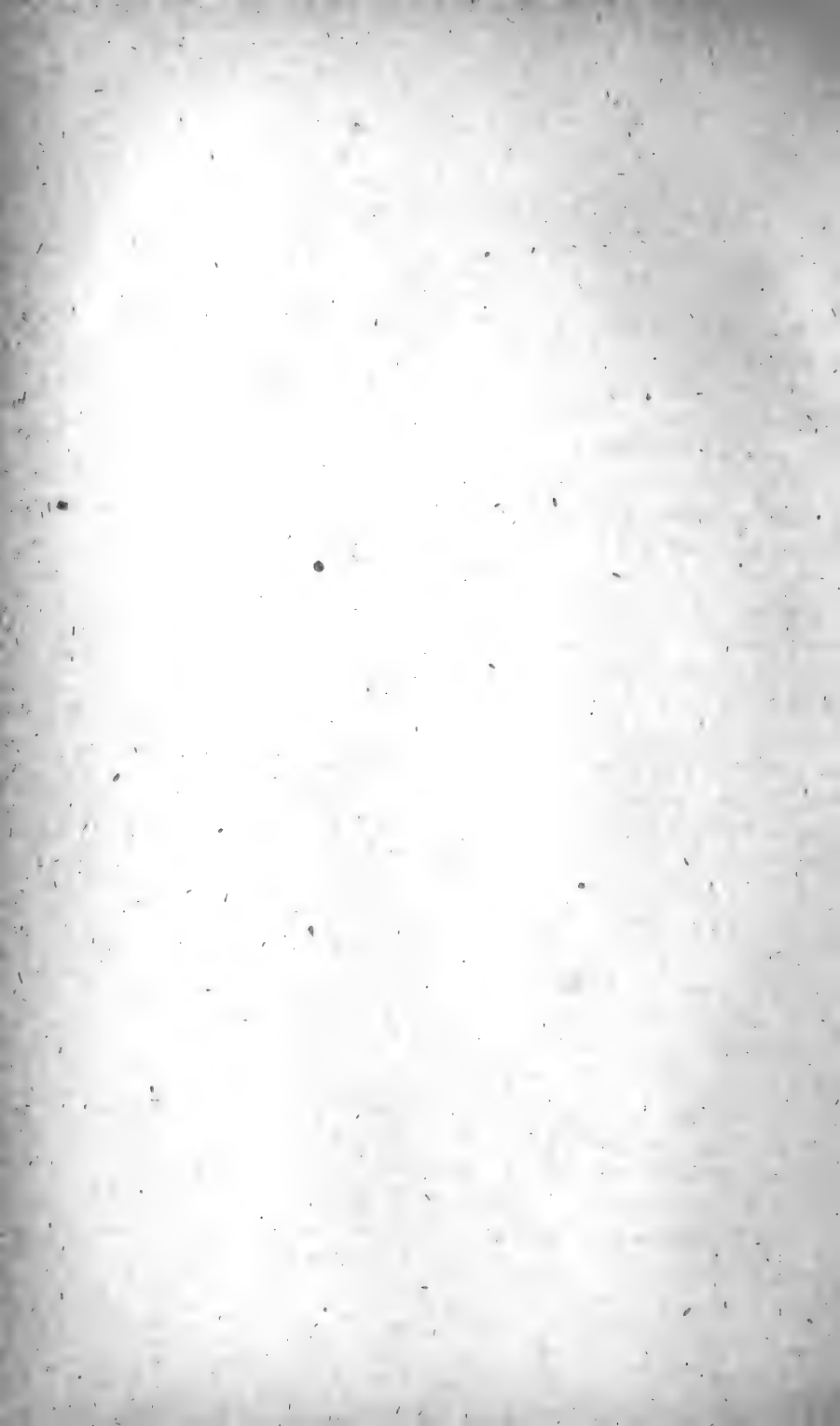
DELIVERED BEFORE THE STATE BOARD OF AGRICULTURE,

IN MASONIC HALL, TRENTON,

ON TUESDAY, FEBRUARY 2, 1886,

BY

HON. THOMAS H. DUDLEY.



PRESIDENT'S ANNUAL ADDRESS.

GENTLEMEN—Another year has come since we last met. The old year, with all its joys, its sorrows and its cares, has gone. The spring-time, with its birds and flowers; summer, with blooming fields and gay landscapes; autumn, with its rich harvests and ripe fruits, and winter with its hoar-frosts and snows, have come and filled their allotted space in time, as the rolling year has passed away. A new year, with its hopes and aspirations, is before us. There are cares to be met, problems to be solved, and duties too numerous to be mentioned to be performed.

Every man has his place in the world, and every one, whatever his rank or station in life or the pursuit he may follow, has his place to fill, and no person a more important one than that of the farmer.

We are too apt to look upon man from the standpoint of the profession or calling he follows in life, and to judge him from that standpoint and limit his capacity, and to some extent tie him down to that calling or that pursuit, without taking into consideration that the boundless universe, with all its unknown secrets and treasures, is open before him as they are to all others, and the duties and obligations he is under as a member of society to do his part towards exploring and utilizing these for the benefit of mankind.

You are agriculturists, yet there are other duties which rest upon you besides planting and gathering; besides the times of seeding and harvesting your crops, important as they are. You have, as members of society, in common with all others under the government, incurred duties and obligations which you cannot and ought not ignore even if you could. To some of these I propose to call your attention.

Before doing so I will refer again to the subject of India wheat, which I discussed a year ago. I then told you of the increased production of wheat in that country, how it had grown up within the past four or five years to millions of bushels; that it was being imported in large quantities into England, France and Belgium, and had

reduced the price in these countries as well as here at home, and was then seriously competing with American wheat in all these markets. All that I then said has been fully confirmed. Whilst our crop of wheat was less, theirs in India was more during the past year. Ours was computed at 430,000,000 of bushels, being much less than the preceding year, when it was over five hundred millions; the crops in India for 1885, was computed at 286,000,000 bushels, being twenty millions over the preceding year.

It will be observed that the crop in India is now more than half as much as what we raise in the States. And though our crop of wheat was less, and our shipments to Europe less than the year previous, the prices instead of improving have fallen in Europe. To show you the extent and effect of this competition, I will read to you an extract from a letter received by me from a corn merchant in Liverpool. Under date of December 19th, 1885, he writes as follows: "Our supplies of wheat, despite such reduced American shipments, are superabundant and prices never so low as this autumn, fully three pence nearly four pence under last year. And still it comes. India appears inexhaustible. My sons, the active partners in the house, are selling ten times as much Indian as American wheat." Probably there is no house in Liverpool that deals more largely in grain than the one he is connected with, or any man who is better informed on these subjects. The great difficulty in India has been in the cost of transporting the wheat to the ports of shipment. The price has been about double from Delhi to Bombay, a distance of 822 miles by rail, what it is from Chicago to New York, a distance of 911 miles.

But the costs have been somewhat reduced. The price of farm labor in India is from six to seven cents of our money per day. The laborers feed themselves out of these wages. The railroad facilities are being increased, which will open up large tracts of rich, cheap lands, equal in fertility to any we have for wheat culture, and which heretofore have had no communication with the seaboard. With these large tracts opened and their abundant cheap labor, there is no reason why, in the very near future, they will not produce double the quantity of wheat they are now producing.

This India wheat can be laid down in the London and Liverpool markets at seventy-five cents per bushel, which is lower than our farmers can do it, and at these prices it will pay the India farmer a larger profit than our farmers are now realizing on the wheat they

sell. This India wheat can be brought to New York by way of the Suez canal for eighty cents, and, but for our protective duty of twenty cents per bushel, it could be laid down there at that price. With the duty added, it can be now placed in New York at one dollar per bushel.

With the reduced rates of transporting wheat to the seaboard, which will follow when new and competing roads are built, as they soon will be, opening up and developing the country; with their cheap and fertile lands, and the low price they are paying for labor, the India farmer within the next ten years will be in the United States with his wheat, competing with our farmers here in our own home markets, unless the present duty of twenty cents per bushel shall be increased. Our farmers should note these facts and take steps to protect themselves. As matters now stand, they cannot expect better prices than they now receive, unless a bad harvest, a famine in India, or a desolating war should intervene to put them up.

By the last national census the population of our country amounted to over fifty millions of people; of these there were but 17,392,099 or 34.68 per cent. who pursued gainful avocations, or, in other words, earned wages, leaving 32,763,684 persons, or 65.32 per cent., who followed no gainful avocation, consequently earning nothing.

A portion of these, no doubt, lived off of their income, but the much larger portion off of those who were earning wages. Of those who earned wages, 7,670,493, or 44.10 per cent., were engaged in agriculture. If we assume that most of the persons who were not earning wages were living, either directly or indirectly, off of those who did earn them, then we will have out of our population, at that time, of fifty millions, over twenty millions of people who were dependent upon agriculture for their subsistence.

This was not quite half of our population, but there was no other single industry in the country that sustained or supported anything like the number that agriculture did. Since then the country has greatly increased in population. It no doubt now contains upwards of fifty-six millions of people, distributed among the different industries, and divided, as to those who earn wages and those who do not earn wages, about in the same proportion or ratio as they did when the last census was taken. I refer to this matter and give these figures to show the important part, numerically, that agriculturists occupy, and the part they play or should play in political matters

connected with the government of the country, aside from raising the food upon which the whole population subsists. They feed all the people, and every industry, whether great or small, is dependent upon them for food; indeed, it has, by some, been claimed that agriculture is the basis or foundation upon which all other industries stand.

Feeding all, and numbering as they do so large a proportion of our population, their influence and power in the government, and in the associations of men, religiously, politically and socially, must of necessity be very great. This being so, I propose very briefly to call your attention to some of the responsibilities and duties which rest upon you politically as members of society. Living, as we do, in a government formed by the people, for the benefit of the people, duties and responsibilities are entailed upon all of us of the most important and weighty character; and on none more than the farmer. No one lives for himself alone, or in a government like ours has a right so to live. He lives, or should, for those who are about or around him as well as for himself. Neither does he live exclusively for the present; his duties, to some extent, are those of a trustee, and reach far out and beyond his present life; he lives for those who are to come after him as well. He is bound in the proper discharge of his duties in life so to live and conduct himself as to do as much good as he can for others as well as for himself, and to do all in his power to perpetuate and hand down to posterity the free institutions of the country unimpaired; and that man who does not so live, and so act, fails in the proper discharge of his duties as a man and as a member of the society in which he lives.

The agriculturists from numbers alone can do much towards shaping public opinion, directing legislation, and giving character and tone to society. They can do much towards eradicating wrongs and abuses which may have grown up. They can do much towards keeping the ship of state, laden as it is with the hopes, the aspirations, the happiness and welfare of the millions who are borne upon it, steady on its course.

The part which they can and should play is so great and important that it is difficult to define or set limits to. They may do great, almost incalculable, good, or if indifferent or neglectful of their duties, may be of but little service to any one; and the world or mankind will not be much the better for their ever having lived. It seems to me that the time has fully come when this great industrial class should come

out and take a more active and prominent part in the affairs of the government than they now take, and make an effort to correct and eradicate some of the abuses and evils which exist, and which are threatening if not undermining the system of free government. No people have more interest in maintaining the government than they.

They should see to it that none but such as are qualified and fit, be taken up or elected to office ; and when dishonest or incompetent people are nominated, defeat them at the ballot-box, it matters not to which political party they may belong, remembering always that country is above party, and good government and the happiness and welfare of the people of more consequence than the success of any party, and above every other consideration.

In laying down these propositions, I do not wish it to be understood that I oppose parties and the formation of political associations ; far from this. I believe that these organizations are, to a certain extent, useful, if not necessary, to good government. Constituted as man on this earth is—indeed, formed by God as we all are, with different ideas, habits and thoughts, no two human beings in the world alike—it cannot be supposed that all will think alike or act alike, or come to the same conclusion, upon any one given topic or subject. They necessarily will differ one with another ; some will regard a matter in one way, whilst others, equally honest, will look upon it and see it quite differently. With this great diversity then that we find among men as well as in nature, it cannot be supposed that all mankind will agree upon any set of propositions or principles, either political, religious, or social, however just or proper they may be. This cannot be expected, even if it was desirable that it should be.

But there are many reasons why it is best that things should be just as they are, and that all mankind should not agree.

God knew what was best when He created all. And what He has done, no doubt, is for the best, though we cannot at all times so see it.

Opposition in human affairs stimulates and leads to greater efforts.

The water that runs does not stagnate, and the atmosphere itself is purified by the storms.

And in the political world the formation of different parties has much the same effect as the disturbance of the elements in the physical world around us. It prevents degeneracy, stagnation and decay in the body politic.

The formation of political parties in a government like ours, there-

fore, is not only proper and beneficial, but may be regarded as almost a matter of necessity. And so long as they are faithfully and honestly conducted, are a great support, as well as safeguard, to the government and the rights and liberties of the people. If there are two parties, one will watch the other and expose its weaknesses and errors, and check the abuse of power if attempted.

While this is so, and the beneficial effects of parties are fully admitted, there is another side to be contemplated; there are abuses which may grow up in parties which may endanger, if not overthrow, the political fabric itself.

Like all other good things, through over-party zeal or bad men, parties may become corrupt and debased, and the machinery run for corrupt and selfish purposes, to the great injury, if not danger, of the government.

It looks much as if this were the tendency of political parties to-day, as if both were being run on the downward track. Whether this is entirely true and things politically are as bad as some believe, it must be admitted that there are at the present time indications and evidences of great abuses, and in this State as well as others, to which the attention of the public should be called, with a view, if possible, to their correction before it is too late; abuses which threaten the foundations of all free government. It is to some of these I wish to call your attention, and first among them are frauds at our elections; and this applies to the primaries as well as to the general elections. Many of the primary elections in the towns and cities held for the election of delegates have become a farce.

Money is freely used to secure the election of delegates, and sometimes to influence the judges of election to make false returns. Tissue ballots and, in some instances, ballot-boxes with false bottoms have been used, and the grossest frauds perpetrated.

And these practices, in many instances, have not only been connived at, but planned and carried into execution by men who stand high in society and fill important political offices of honor and trust. In some localities and communities they have become so common and notorious that they are openly admitted, and constitute the town talk and political scandal of the day. Fortunately for the people, as yet, it is believed that these shameful practices at the primaries are confined mainly to the towns and have not extended to the rural portions of the State, and that the great agricultural community are comparatively, if not wholly, free from them.

This is fortunate, for where the pollution is confined to a part only, there is not so much danger; it is only when the whole becomes contaminated that hope leaves and despair takes her place to mourn over the shattered wreck that remains.

Where there is not a free and honest ballot, there is no longer a free government. It may exist in name, but it does not and cannot exist in substance. It is a baseless fabric, a form without substance, and sooner or later must go down. Such it is believed is the condition of some of the political primaries in our State, and, if true, it must be admitted they show a deplorable condition of things in politics. Men who will resort to such practices and frauds in their own party, and against their own associates and political friends, will not hesitate to perpetrate the same, if not worse and still more glaring, at the ballot-boxes, against their political opponents when party zeal or interest prompts them to do so.

Educated in such schools as some of the primaries in the cities are, the men connected with them will make apt and ready scholars for all kinds of frauds and crimes at the ballot-box.

Unfortunately, the tendency of things in our cities is to leave, in most instances, the management of the primaries in the hands of the worst part of the community; the better part of the people, or those most capable and best qualified, remaining at home, some from indifference and others giving business, want of influence or degradation of politics as an excuse, forgetting that, in a free government like ours, it is the duty of each individual to come out and take part in political matters, and that, without regard to his sensibilities, his business or his personal comfort, a duty he owes to himself, to his family and his country, and one he has no right to ignore or shirk. The performance of this duty is a part of the price he pays for the privileges and liberties he enjoys, under a free government, and no man can or ought to excuse himself from it. Indeed, no man's hands are clear of mal-administration in public affairs, unless he has discharged this duty, and that without regard to any selfish consequences to himself personally.

The tendency in our towns and centers of population being in this direction, we have only the rural or agricultural part of the country to rely upon. It is said by some that it is the infusion of country blood from the rural districts that keeps our cities alive; and it may be, indeed is, quite possible, that the agricultural part of our commu-

nity may, in the future, become the vitalizing power that will preserve our free form of government, the source that will infuse health and life in the body politic and keep it free from pollution and death.

The same frauds practiced at the primaries may be practiced and often are at the elections. Repeating, personation, tissue ballots, fraudulent returns and false certificates of election to accomplish the wicked purposes of defeating the will of the people as expressed at the ballot-box.

It seems strange that people can be found so vicious and depraved as to be willing to violate the law of the land and commit crimes merely for the success of their party, and that often when they have no personal interest in the result. But such, unfortunately, is too often the case.

Another practice which is equally reprehensible, and which is working great injury and believed to be growing, not only in this State, but throughout the country, is that of buying votes at the elections—bribing the voters. This is done sometimes openly and sometimes in a roundabout way. It is a notorious fact that money is contributed and raised in large sums for this purpose. There are expenses at every election which are legitimate and proper. Money to get up public meetings, to pay persons for canvassing; to hire carriages to enable the old, lame, sick and distant voters to reach the polls, &c. And it is no offense, but proper, to contribute money for any of these purposes, and, if used in this way when contributed, no wrong or injury would be done. But, alas! the money expended for these purposes is small and insignificant as compared to the large and almost fabulous sums used for bribing voters.

To such an extent is this carried, that the success of the one party or the other, or at least of the one or other candidate who is running, depends in many instances almost entirely upon the amount of money that is put into the election, so that the election turns, not upon the merit, fitness or qualifications of the candidate, but upon the money contributed. The man who has the most money to buy votes wins.

Thus, men are elected to your Legislature and to fill almost every office of honor or trust in the gift of the people—not because they are worthy or qualified to fill the office, or to discharge the duties when elected, or even because a majority of the people desire them elected; but because they or their friends, who, it may be, want to use them for their own selfish purpose, contribute enough money to buy votes to elect them.

This practice of buying votes has become so common and so general by both of the two great parties in some localities that there is no longer remonstrance against it.

The most you hear is sometimes a feeble protest from a member of the party defeated that it was shameful the way money had been used to buy votes; but the great mass of the people, from custom, have come to look upon it with cold indifference, if not approval, and in this way the wrong is permitted and tolerated, if not justified. We have laws on our statute book making it a penal offense to bribe voters, but, unfortunately, the laws against bribery and corruption are not enforced. They have almost, if not quite, become a dead letter, and the crimes under them go unpunished. With such doings, would it be a matter of much surprise if legislators thus elected should themselves be open to bribes whilst in office? It is a common thing to hear the corruption of the legislatures of the different States of the Union discussed, especially among politicians.

It was but a few years since we claimed that the Legislature of our own little State was free from corruption; that our lawmakers were pure and incorruptible.

Whilst claiming this for ourselves we were loud and unsparing in our denunciations of those where it existed. But how is it now? In all the elections for United States Senators that have taken place in our State for some years past it has been charged that thousands of dollars have been used to influence the votes to elect. In some instances it has been referred to in the public newspapers—the charges of the use of money to buy votes made openly, to the great scandal of the Legislature and those resorting to its use.

If these charges are true, they constitute a crime which nothing can justify. And the crime is all the same whether the money was paid direct or through others. It was the use of money to influence the vote that constituted the crime, it matters not how or by whom it was paid. If money has been used to influence the members of the Legislature in their votes for Senators, may it not have been used to influence votes in legislation as well? Let us hope not; but with the great corporations, and especially the great railroad corporations running through our State, the temptation to use it to influence legislation where these corporations are interested or imagine themselves to be so, is great.

There is much danger of this, too, where there are conflicting inter-

ests between rival roads, and still more where any of these corporations attempt to interfere with the politics of the State, either directly or indirectly, through their officers or agents, whom they put forward or permit to come forward and take part in politics or hold political offices.

Railroads are necessary for the proper development of the State and the intercourse between different localities by the people. Indeed, the business of the country could not be carried on without them. They ought, therefore, to receive all proper and necessary protection. No unnecessary restrictions should be imposed upon them, or the exercise of their corporate privileges interfered with. All these they should be permitted to enjoy in full, but beyond this they should never be allowed to go. The people have rights as well as the the corporations, and these rights are sacred and should not be intrenched upon. Among these is the right to regulate and carry on the government. No corporation ought to be permitted to interfere with this or to take part in the politics of the State, much less to control or hold political offices. No State or people should tolerate or permit this. Any railroad that acts properly can obtain all necessary protection and legislation in the State without interfering with politics. The people will always be willing to accord them this, and they ought not to expect, much less ask, for more.

What is right they should have; what is wrong they ought not to ask.

Situated as New Jersey is, between the two great States of New York and Pennsylvania, our people should watch with jealous care all attempts of corporations in either of those States at interfering with our politics, or intrenching upon the rights of the people.

This is all the more necessary, from the fact that some of the great railroad corporations of these States have obtained control and are now running many of our railroads. Any attempts of these corporations to interfere or control our politics, either directly or indirectly, through their officers or agents, should be resisted. Our people should say to all of these corporations: You may exercise your corporate privileges and run the railroads, of which you have obtained control, but you cannot and shall not run our government. We, as Jerseymen, consider ourselves quite competent to do this, and that without your interference.

Our courts have always been regarded, and very justly, as the pal-

ladium of our liberties. Whilst charges of corruption have been made against some of the other co-ordinate branches of our government, it has never been made against the judiciary. Thus far it has not been charged that bribery or corruption to any extent has ever reached or influenced our courts.

According this to the whole country, we claim, and with just pride, that no State has a more pure judiciary than our own. In our history as a State and nation, this branch of the government has escaped criticism in this particular. While reflecting men have trembled over the corruption and venality around them, sometimes even in high places, they have taken courage when they turned to the judiciary.

Confidence is justly maintained in our courts, and we have come to regard them as the sheet anchor of our safety for the present, and our hopes for the future.

I have referred to these matters because I think the time has come when all patriotic men, it matters not to what party they may belong, should pause and look squarely at these questions, and I have called your attention to them, because you are farmers, and represent numerically, as we have already seen, the largest industry of the country, and consequently at the polls exercise the largest political power or influence.

Sturdy, honest and independent as a class, you have yielded less to the seductive influence of money in political matters. Its corrupting influence has not been much felt as yet in the votes you have given. It is therefore to the farmers of our country, so it seems to me, to whom we are mainly to look for the correction of these abuses. They have it in their power to check them whenever they will determine to do so, and go to work in earnest to accomplish it. Let them in a body, as a class, but resolve to stop it and it will done.

If they determine that no persons but such as are qualified and fit shall be taken up for office; and no one who is not competent and fit to fill the office, or who has secured his nomination through fraud or corruption, shall be elected, even if nominated, it matters not to which party he or they may belong, they will stop this business and purify the political atmosphere.

I know how binding party ties are. I know, too, the infirmities of poor human nature, and how easy it is to yield our judgment and permit it to be influenced and warped by our party or political associates, and how hard it is for any one to break from these, and to come out and

pursue an independent and patriotic course; yet every one should remember what has already been said, that country is above party, and good government and the welfare and happiness of the people far above and beyond all party considerations or party organizations, or the aspirations or ambitions of any individual, however exalted he may be. If we would but for one moment reflect that parties should only be formed and run for the government, and government never run for the parties, it would be more easy to be patriotic.

From what has been said it must not be inferred that all persons engaged in agriculture are patriotic and pure, or that there are no good and virtuous among the other classes of society. I do not intend to convey any such idea. There can be no doubt but what there are just as corrupt men among the farmers as there are in the other classes; and that there are as pure and upright men in the other branches of industries either in town or country as there are among the farmers. I fully admit this. Constituted as society is in this world, there are and ever will be good and bad in all circles and classes of society. There is no condition or calling exempt.

All that is claimed is that which has been before stated, that the agriculturists, residing as most of them do in the rural portions of our country, when taken as a whole or class, have not yielded to the seductive and corrupting influences of money in the matter of politics to the same extent as the other classes, especially those living in our towns and the thickly settled parts of the country.

Neither can it be claimed that either of the political parties in our State is exempt from these criminal practices. Unfortunately we have too many examples showing that both of the two great parties are guilty. Both parties have used money to bribe and corrupt the voters; both of the parties have resorted to fraud to defeat the will of the people as expressed at the ballot-box; and both of the parties or individual members of the party, as has been charged, have used money to influence votes in the election of United States Senators.

To such an extent has the use of money been carried, that it has almost come to this, as is charged, that the one who has the most money can always win. This is sad and humiliating, and all the more so because, as is claimed, both parties are guilty. If one party were free from it we could then direct all of our efforts against the guilty one and eradicate the evil; but when both are guilty it shows a diseased condition of society to be deplored, and one that is well calcu-

lated to excite uneasiness, if not alarm, among all who love their country and desire free government preserved and perpetuated. The more deep-rooted and general the disease, the harder to eradicate. If permitted, like a cancer it will eat into the core, destroying all vitality and life, and at last the political fabric itself will crumble and fall.

Corruption and decay will soon eat the heart away.

"'Twere long to tell, and sad to trace
Each step from splendor to disgrace ;
Enough—no foreign foe could quell
Thy soul, till from itself it fell ;
Yes ! self-abasement paved the way
To villain bonds and despot sway."

If such was the fate of ancient Greece, whose ruins now only remain to tell us of her forever magnificence and grandeur, in the latter part of the nineteenth century, with all the progress we have since made, with all our education, with all our civilization, may we not expect a different fate for the largest and most prosperous republic the world has ever seen ?

Upon the people of this great country, and it may be largely upon the agriculturists of the country, the solution of this question depends. Let us all cherish the hope that there may be found virtue and patriotism enough to conduct us in safety through all the perils that beset us, so that we can hand down to posterity, for the benefit of the countless millions yet unborn, the free institutions of the republic, untarnished and unimpaired, and thus demonstrate once more to the world man's capacity for self-government.



ADDRESS

BY PROF. W. O. ATWATER, MIDDLETOWN, CONN.



ADDRESS.

BY PROF. W. O. ATWATER, MIDDLETOWN, CONN.

MR. PRESIDENT AND GENTLEMEN—Some two years ago it was my privilege to be present at a meeting of your Board, and to speak on the chemistry of the feeding of plants. When your Secretary asked me to come again, I inferred from his letter and a little conversation that what would be most acceptable to you would be not a lecture, but a familiar talk in continuation of what was said when I was here before. In attempting this I will endeavor not to be too scientific, although I speak to you as a chemist, as a pure theorist, who knows extremely little about practical farming. I shall get on most easily if you will at any time ask questions. I have, as you see, a number of notes, but shall be most happy to leave them and take the time allotted and talk on any subject which pleases you most. Please feel free, therefore, to interrupt me at any point with your questions and suggestions. I am never so much at home as when somebody is firing a question at me. When my knowledge fails, as it is very apt to do, I have always a very easy answer, "I don't know."

I wish, first, to make some statements about the food of plants—what plants live upon, and how they get hold of those things out of the air and out of the ground; and secondly, about the different characteristics of different plants, in reference to their food and the action of fertilizing materials upon their growth. If there should be time, I will add something about differences in soils and of the application of these principles to the use of fertilizers.

If you should happen into my laboratory at any time, you might see us making chemical analyses. Suppose we are analyzing one of these specimens of corn or potatoes. (Indicating exhibits on the table.) We would put them into a kind of oven and dry out all the water. We should then take some of the dried material and burn it until

nothing was left but the ashes. We distinguish in the laboratory between these three different kinds of material occurring in all plants, no matter what they are: The water; the combustible portion, which we call organic matter, and which burns away; and the ash, the mineral matter. Now when the corn and potatoes are growing they must get all these materials for their growth from some source. The water, which consists of the two elements oxygen and hydrogen, comes from the air in the form of rain. This has fallen upon the earth mostly in the form of rain, has soaked into the soil and has been taken up by the plant through the roots. The mineral matter all comes from the soil. The most of the organic or combustible matter, which passes off in the form of gas through the chimney when the material is burned, comes from the air. It is composed of carbon, oxygen, hydrogen and nitrogen. I said that most of the organic matter came from the air. The carbon, oxygen and hydrogen are all from this source, though very nearly all the oxygen and hydrogen first came into the soil as water, which was taken up by the roots, while the carbon was taken probably from the air by the foliage of the plant. Much of the nitrogen, some chemists and vegetable physiologists say practically all, was taken from the soil by the roots of the plants. All the mineral matter, the ash, came from the earth. Our analyses show that the mineral matter consists of potash, soda, lime, magnesia, iron, phosphorus in the form of phosphoric acid, sulphur as sulphuric acid, silica, chlorine and sometimes other chemical elements and compounds. Every time we make an analysis of the plant we find these ingredients present. The plant cannot grow without them.

It will do no harm if I repeat some of the statements made here a couple of years ago, since I am sure none of you will remember what was said then. [Laughter.] Indeed, two or three requests since I have come here lead me to thus repeat, instead of giving you some other material I had prepared.

There is a certain list of the elements of the plant which must come from the soil. They include potash, lime, magnesia, iron, phosphoric acid, sulphuric acid, chlorine and nitrogen. If, now, our soils supply a sufficient quantity of each one of these ingredients, so that the plant could get out and use them, and if other conditions, temperature, moisture, etc., are favorable, then we have a large crop. But if any one of these essential ingredients is lacking, the crop fails.

Possibly some of you may recall in the former talk to which I referred, an illustration in the form of a picture of an experiment, which was made in Germany. It showed a number of buckwheat plants which were grown, not in soil at all, but in water, the water being contained in glass jars. In that water were put the materials which the buckwheat takes out of the soil while growing. These materials made up what you might call the normal fertilizing mixture. The plants grew wonderfully. One was nearly eight feet high, and had by actual count over seven hundred perfect seeds and enough imperfect ones to make a total of nearly one thousand grains. Such growth we never see in ordinary field culture.

What was the result in growing that buckwheat if one of the essential ingredients was not supplied? In one case the potash was omitted from the water, and instead of a plant eight feet high there was a little spindling affair only a few inches high. If but a small quantity of potash had been placed in the water, when the potash was exhausted the plant would have stopped growing. Careful observation showed that in the experiments without potash in the solution in which the roots were grown, the plant could not manufacture starch in the leaves. Of course, therefore, there was no starch to be transferred to the other parts of the plant. Where soda was used in place of potash, it did not help the matter. In like manner, when any other essential ingredient was omitted, the plant failed to grow.

Let me, instead of talking further of these very interesting experiments, briefly recapitulate what I have said, and add a few statements regarding the growth of plants in our ordinary soils and the proper use of fertilizers to help them grow :

1. Plants, like animals, require food for life and growth. A part of the food of plants comes from the atmosphere, the rest is furnished by the soil. No ordinary cultivated plant can thrive without a sufficient supply of each of a number of substances needed for its food. With an abundance of all of these, in forms in which the plant can use them, and with other circumstances favorable, the crop will flourish and the yield be large. But if the available supply of any one of them be too small, a light yield is inevitable. If all the other conditions for a profitable crop of corn, potatoes, or other plants, are fulfilled in the soil, except that potash is deficient, the crop will surely fail. But if the potash be supplied, the yield will be abundant.

2. The most important soil-ingredients of plant-food, the ones that the atmosphere cannot supply at all or not in sufficient quantity, and the soil or fertilizers must supply so that the plant can absorb them through its roots, are *potash, lime, magnesia, iron, phosphoric acid, sulphuric acid, chlorine*, and some compound of *nitrogen*. Plants also take silica, soda and some other materials from the soil, but these are needed only in minute quantities or not at all.

3. In removing crops from the soil we take away plant-food. This is the chief cause of soil exhaustion. Lack of fertility is commonly due, in large part or entirely, to lack of plant-food.

4. Soils vary greatly in their capabilities of supplying food to crops. Different ingredients are deficient in different soils. The chief lack of one may be potash, of another phosphoric acid, of another several ingredients, and so on.

5. Soils fail to furnish enough food to crops, not so much because they have not abundant stores as because the materials are not in available forms. A soil may have thousands of pounds of phosphoric acid within reach of the plant, but locked up in fragments of rock so that the roots cannot absorb it and thus the crop will fail for lack of phosphoric acid.

6. The infertility of many soils is due more to their mechanical condition, their texture, and relations to heat and moisture, than to lack of plant-food. Such soils want amendment first and manures afterward. Some soils will give good returns for manuring; others, without irrigation, or amendment by draining, tillage, use of lime, marl, or muck, or otherwise, will not.

FERTILIZERS AND PLANT-FOOD.

7. The chief use of fertilizers is to supply plant-food which crops need and soils fail to furnish.

8. But the indirect action of fertilizers in improving the mechanical condition of the soil and rendering its stores of plant-food available is often very important. Hence cheap materials like lime and plaster are frequently more profitable than manure or artificial fertilizers.

9. Plants vary greatly with respect to their demands for food, their capabilities of gathering the ingredients from soil and air, and the effects of different fertilizers upon their growth. Hence the proper fertilizer in a given case depends upon the crop as well as upon the soil.

10. The only ingredients of plant-food which we need to consider in commercial fertilizers, are *potash, lime, magnesia, phosphoric acid, sulphuric acid* and *nitrogen*. Of this list, magnesia is generally abundant in even "worn-out" soils. Sulphuric acid and lime are more often deficient, and hence one reason of the good effect so often observed from the application of lime and plaster. The remaining substances, the *phosphoric acid, nitrogen* and *potash*, are the most important ingredients of our common commercial fertilizers, because of both their scarcity in the soil and their high cost.

11. The chief use of commercial fertilizers, guano, phosphates, bone, potash, salts and special fertilizers prepared by formulæ for different crops, is to supply nitrogen, phosphoric acid and potash.

12. These materials are expensive, but the right ones in the right places are nevertheless very profitable. But the same fertilizers in other cases may bring little or no return.

13. It is not good economy to pay high prices for materials which our soils themselves may furnish, but it is good economy to supply the lacking ones in the cheapest way. Farmers cannot afford to use commercial fertilizers at random. No more can they afford to have their crops fail when a small outlay for the proper fertilizer would bring a bountiful harvest. And it is time that they understood these facts, the reasons, and how to make use of them.

14. The only way to find what our soils want is to study them by careful observation and experiments. Success in farming, as in other business, requires the use of brains.

VALUABLE INGREDIENTS OF COMMERCIAL FERTILIZERS.

Certain kinds of fertilizers sold in the markets furnish nitrogen and little or nothing else of much value for plant-food. Such are dried blood, meat scraps, sulphate of ammonia, and nitrate of soda. Others, as phosphates and superphosphates, owe their effectiveness mainly to their phosphoric acid. Still others contain both nitrogen and phosphoric acid. Such are Peruvian guano, fish guano, bone, and "ammoniated" superphosphates. Peruvian guano and fish supply considerable of both nitrogen and phosphoric acid, while bone and "ammoniated" superphosphates contain a large proportion of phosphoric acid and but little nitrogen. Potash is supplied in the German potash salts, the "muriate of potash," "sulphate of potash" and

kainit. The "complete fertilizers," or "special fertilizers," prepared according to formulas for special crops, as corn, potatoes, turnips, etc., contain all the above ingredients. Farm manures, stable manure, hen manure, etc., supply all the soil-ingredients of plant-food. Wood ashes contain all but nitrogen.

There are many cases in which crops fail because the soil does not supply enough phosphoric acid, and where an application of superphosphate or bone-dust brings a bountiful harvest. There are likewise many in which potash is especially deficient, and potash, salt or unleached ashes will supply the need. In some cases nitrogen in nitrate of soda or other form has the desired effect. In others nitrogen and phosphoric acid are needed, and Peruvian guano or fish may be used with great profit. In still others a mixture of superphosphate or bone-dust and potash salt, supplying phosphoric acid and potash, is the most economical material.

Again, on some soils and for some crops nothing short of a "complete" fertilizer will suffice; and very frequently where a partial fertilizer succeeds well at first, a "complete" fertilizer, after a time, becomes necessary, and often when a farmer does not know just what his soil and crops need, it is better to use a "complete" fertilizer than to risk loss of the crop.

And finally, while most soils respond to the application of manures, there are many on which all fertilizers fail. In short, the golden rule in the use of commercial fertilizers is to select those which supply, in the best forms and at the lowest cost, the plant-food which the crops need and the soil fails to furnish.

But after all this I have told only a part of the story. The effect of the fertilizer is decided by a great variety of circumstances. Among these the most important are: the soil, the climate and season, the feeding capacity of the crop, form of combination of the ingredients of the fertilizer, the indirect action of the fertilizer in changing the texture of the soil, and especially in setting free the plant food which the soil contains. And I might add to these the effects of tillage, of the composition of the plant, and finally the differences in seed.

You are well aware that your State Experiment Station has instituted a series of field experiments with different fertilizers which are being carried out, not only by the station itself, but under its supervision by a number of intelligent farmers in different portions of the State. A large number of experiments of the same sort were made several years ago by agricultural colleges, experiment stations and

private farmers in all the States east of the Mississippi, and several provinces of Canada. The plans were drawn up by myself, and the reports of several hundred were sent me for examination. Accounts of them have appeared in a number of publications, and I will not burden you with a repetition of them here, but will only call your attention to a few results bearing upon one or two points which I have just referred to; and this I may do the more appropriately as some figures and conclusions which I have here, have never yet been printed in the United States, though they appeared some time ago in a French chemical journal.

The general plan of these experiments consisted in applying different fertilizers to the soil and noting the effects upon the crops produced. The fertilizers contained nitrogen, phosphoric acid and potash either singly, two by two, or all three together. The nitrogen was supplied in the form of nitrate of soda, sulphate of ammonia or dried blood. The phosphoric acid was furnished in superphosphates—that is to say an acid phosphate like dissolved bone-black which contained also sulphuric acid and lime. For the potash, the German muriate of potash was used. The method consisted in dividing an acre of ground or more or less into long, parallel strips, leaving one or two of these unmanured and applying the fertilizers to the rest. Other fertilizers, such as bone, plaster and various farm manures, were also tried in many cases. The experiments were made with a great variety of crops, more with corn and potatoes, however, than with any others.

I will not stop to talk of the great variety in different soils, which the results of the experiments brought out, and will come directly to another matter—that which I have spoken of as the feeding capacities of the plants. By this I mean the varying powers which different plants have of gathering their supplies of food from the soil and air, and the consequent differences in the effects of fertilizers upon their growth.

A vast deal of experience in the laboratory and in the field bears concurrent testimony to the fact, though we are still deplorably in the dark as to how or why it is so, that different kinds of plants have different capacities for making use of the stores of food that soil and air contain. Of the ingredients of plant-food in our soils, the most important, because the most costly, is nitrogen. Leguminous crops, like clover, do somehow or other gather a good supply of nitrogen where cereals, such as wheat, barley, rye and oats would half starve for lack of it, and this in the face of the fact that leguminous plants

contain a great deal of nitrogen, and cereals relatively little. Hence a heavy nitrogenous manuring may pay well for wheat and be in large part lost on clover.

The experiments I have referred to throw some light upon this question, especially regarding corn, potatoes and oats. Among them were a considerable number of the so-called "special nitrogen experiments," in which the effects of nitrogen in different forms of combination and different quantities were tested. The nitrogen was supplied in the form of nitric acid, in nitrate of soda, in the form of ammonia, in sulphate of ammonia, and in the form which chemists call organic nitrogen in dried blood. With these, superphosphate and muriate of potash were employed. Omitting the results where the ingredients were used singly, let me give you a brief outline thus obtained with the complete fertilizers containing the nitrogen in different forms and amounts. These included in each case a mixture designated as "mixed minerals," which supplied 300 pounds of superphosphate and 150 pounds of muriate of potash per acre. To this mixture the nitrogenous materials were added in quantities sufficient to furnish on the different plots 24, 48 or 72 pounds of nitrogen per acre. The effects of nitrogen in the different forms of combination were on the average about the same.

I will call your attention, therefore, to the effects of different amounts, as I have them here concisely stated, in tabular form. I have figured out the amounts of shelled corn, potatoes and oats obtained per acre in the experiments with each fertilizing mixture, and give averages of all the experiments. If we take the average yield with the mixed minerals alone, that is to say, with all the materials which are ordinarily contained in commercial fertilizers, except nitrogen, at 100, the amounts with the different quantities of nitrogen will be as in the table herewith:

RESULTS OF EXPERIMENTS ON THE EFFECTS OF NITROGENOUS FERTILIZERS
UPON CORN, POTATOES AND OATS.

IN EXPERIMENTS WITH—			
	Corn.	Potatoes.	Oats.
Estimating the yield with "mixed minerals" at.....	100	100	100
The yield with mixed minerals and nitrogen, 24 lbs., was.....	111	127	154
The yield with mixed minerals and nitrogen, 48 lbs., was.....	112	138	166
The yield with mixed minerals and nitrogen, 72 lbs., was.....	115	127	171

That is to say, for every 100 bushels of corn obtained with the mixed minerals, we get, by adding 24 pounds of nitrogen per acre, 111 bushels; with 48 pounds of nitrogen, 112, and with 72 pounds of nitrogen in addition to the mixed minerals, 115 bushels. The yield of corn is thus increased slightly by the nitrogen, but the gain is extremely small—out of all proportion to the large cost of nitrogen. The potatoes give a much more decided response to the nitrogen, the 24 pounds increasing the yield from 100 to 127, the 48 pounds bringing it up to 138, while with the 72 pounds it is only 127. I should add, however, that the number of experiments with potatoes was much smaller than with corn. A larger number would give different averages.

The oats responded much more vigorously to the nitrogen, the yield rising to 171 with the largest amount. The number of experiments with oats was less, even, than with potatoes, but since in the cases where oats, potatoes and corn were grown side by side, the results tallied with the general averages here given, I think the experiments may be taken as indicating very decidedly that the corn is least, while the oats are the most, affected by nitrogen in the fertilizers. These experiments, so far as they go, therefore, imply that we should, in general, be sparing with our use of nitrogen for corn, that we may use moderate quantities on potatoes with profit, and that the oats are especially benefited by it.

There is another way in which the results of the experiments may be summarized so as to show the comparative effects of the phosphoric acid, potash and nitrogen on the growth of plants. Those of you who have read the writings of Ville are familiar with his ideas of "dominant" ingredients for different plants. Taking plants and soils as they run, Ville's ideas in this respect are hardly sustained by actual experience. Nevertheless, there appear to be very marked differences in the effects of phosphates and potash salts as well as nitrogenous materials on the growth of the plants, though differences of soil account for as much or more than the differences of the feeding capacities of plants in deciding the effects of the fertilizer. I have taken the results of 107 experiments with corn and potatoes and put them together in such a way as I think throws some light upon this part of the problem.

I remarked that the superphosphate, muriate of potash, and nitrate of soda were used singly, two by two, and all three together. If

now we take the yield with the superphosphate alone and subtract the yields where no fertilizer was used, we have a difference which we may attribute to the superphosphate. Again, if we subtract the produce with the muriate of potash alone from that of muriate of potash and superphosphate together, we get a second difference, which may be attributed to the action of the superphosphate. In the same manner we may subtract the yield with nitrate of soda, from that with nitrate of soda and superphosphate together, and obtain a third difference, and finally subtracting the yield with the nitrate of soda and the muriate of potash together from that with the complete fertilizer, we have a fourth value for the action for the superphosphate. In each experiment we thus have four different values for the effect of the phosphoric acid. In the calculations to which I refer, these four are put together and their averages are taken as a measure of the effect of the superphosphate in that experiment. In like manner we obtain an average of the four values for the potash in the muriate. A similar estimate may be made of the effect of the nitrogen in the nitrate of soda or other nitrogenous fertilizers as the case may be.

In some cases these different values for each ingredient—the superphosphate, for instance—are very uniform, in others they are extremely variable, and on examining these computations as they have been made for a large number of experiments, they seem to me to furnish one of the most severe tests of the accuracy and reliability of such experiments that could be devised.

Out of eighty field experiments with corn, but twenty-four were so free from the disturbing influences of unevenness in the soil, drouth, cold, etc., as to make them seem to me entirely satisfactory. And of twenty-seven experiments with potatoes, only twelve seem to me to be free from these same disturbing influences. Such are the difficulties which beset field experiments. When, however, we have a large number, we may take the average of the whole and be reasonably sure that the disturbing effects of unevenness of the soil will counterbalance each other to a greater or less degree, though experiments that are injured by drouth or wet, heat or cold, can, I think, hardly be taken as fair tests in the questions under discussion.

In some cases the corn responded very largely to the phosphoric acid, that is to say to the superphosphate, and paid very little heed to the potash or to the nitrogen. In other cases the corn responded very

largely to the potash, and paid little attention to the other ingredients. In a very few instances it refused to respond to either the phosphate or the potash salt, and at the same time was considerably benefited by the nitrogen. In tabulating the results, I have regarded the increase of less than four bushels per acre as too small to be taken into account, and in such cases have designated the fertilizing material, superphosphate, muriate of potash or nitrogen, as "inefficient. Where, on the other hand, the crop responded very largely to either fertilizing material and was increased by less than four bushels with either of the others, I have called the effective material "the regulating ingredient." Where the fertilizer could neither be the "regulating ingredient" nor inefficient, I have called it "more or less efficient."

The table herewith gives the results as estimated in this way. The "select experiments" are those which were reasonably free from the disturbing influences above referred to.

COMPARATIVE EFFECTS OF PHOSPHORIC ACID, POTASH AND NITROGEN IN 107 EXPERIMENTS WITH CORN AND POTATOES.

	SUPERPHOSPHATE (300 pounds) containing, besides Sulphuric Acid and Lime, Phosphoric Acid, P ₂ O ₅ (48 pounds), per acre.				* MURIATE OF POTASH (200 pounds) containing Potassium equivalent to Potash, K ₂ O (100 pounds), per acre.				NITRATE OF SODA (200 pounds) containing Nitro- gen, N (32 lbs.), per acre.			
	Regulating ingredient.	More or less efficient.	Inefficient.	Total.	Regulating ingredient.	More or less efficient.	Inefficient.	Total.	Regulating ingredient.	More or less efficient.	Inefficient.	Total.
Corn—80 experiments.....	27	35	18	80	11	25	44	80	4	28	48	80
Potatoes—27 experiments...	3	18	6	27	1	17	9	27	..	16	11	27
† Selected experiments—												
Corn—24 experiments.....	6	13	5	24	3	13	8	24	1	10	13	24
Potatoes—12 experiments...	.....	11	1	12	1	11	.....	12	..	9	3	12

Some of the conclusions to which these experiments lead may be briefly summarized thus :

As regards the influence of mineral ingredients :

* In several experiments (150 pounds) with 75 pounds Potash and 24 pounds Nitrogen respectively.

† The results of which, as shown by the reports, were not materially impaired by unfavorable weather, unevenness of soil or other circumstances.

1. The produce of corn was notably augmented by the potash often and by the phosphoric acid in the majority of the cases.

2. The produce of potatoes was notably increased by each (phosphoric acid and potash) in almost every case where the influence of the fertilizers was not obstructed by drouth, cold and other disturbing influences.

3. The produce of oats (in a smaller number of experiments) was apparently less increased by the potash than that of either corn or potatoes, while the phosphoric acid was usually beneficial.

As regards the influence of nitrogen :

4. The corn generally gave but little response to any nitrogenous materials, though in some cases it was materially helped by them. The potatoes and oats responded largely to the nitrogen in nearly every case where circumstances of climate and season permitted.

As regards the feeding capacity of the different plants, the results may be stated thus :

5. The corn seems (1) to respond largely to the mineral ingredients and (2) but little to the nitrogenous manures and (3) to possess in a very high degree the capacity for providing itself with nitrogen from natural sources.

6. Although botanically corn is closely related to wheat, oats and other cereals, it seems in its physiological relations to the ingredients of its food, to have more analogy with the legumes.

7. The potatoes were helped by each one of the fertilizing ingredients (superphosphate, potash salts and nitrogen compounds), in almost every case where climate and season allowed. But they gave but moderate yields with the mineral fertilizers, while responding largely to the nitrogen.

8. These experiments indicate decidedly that potatoes differ from corn, in that they have less capacity for gathering for themselves from natural sources sufficient quantities of nitrogen and other nutritive materials. They appear to demand a more ample provision by readily assimilable food close at hand. This difference between the potatoes and the corn may perhaps be explained, in part at least, by the differences in the root.

9. Oats (in a smaller number of experiments) were even more sensitive than the potatoes to the lack of immediately available nitrogen in the soil, and made relatively larger response to the nitrogen of fertilizers.

A Member.—Can corn obtain nitrogen from the atmosphere?

Prof. Atwater.—This subject of plants obtaining nitrogen directly from the atmosphere is one of my pet hobbies, and if you get me to running on it there is no telling when I may stop. As regards your question, however, whether corn obtains any considerable quantity of its nitrogen from the air or not, I must answer, very simply, "I don't know." I might guess that it does, but it would be only a guess. My belief is that some plants, such, for instance, as clover and peas, obtain a portion of their nitrogen directly from the air; but no man can say definitely what plants do obtain nitrogen in this way, and what plants do not, or how much of their nitrogen plants of any species thus acquire. The question of the acquisition of atmospheric nitrogen by plants is an old and much vexed one. The majority of chemists and vegetable physiologists have been, for years past, inclined to doubt whether any of our cultivated plants obtain any considerable quantity of nitrogen through their foliage from the air, though there is, even among many of those who hold this view, a feeling that we have much more to learn about the matter, and that many facts which we observe in the growth of plants are extremely difficult to explain, unless we allow that a considerable part of their nitrogen comes to them directly from the air. Some of you may have noticed in the *Country Gentleman* and in the *Philadelphia Times* a discussion of this matter between Sir John Lawes, of England, and myself.

The results of the famous experiments of Messrs. Lawes and Gilbert are apparently opposed to the belief in the atmospheric source of plant nitrogen. The same is true of the researches of Boussingault and other well-known investigators. While I have not regarded these results as conclusive, I have, until lately, been inclined to believe that the balance of the evidence was very decidedly in favor of the more common view. But some late experiments of my own, coupled with numerous European observations, have led me to a somewhat different opinion. Let me give you my own, perhaps partisan, view of the subject, and then attempt a fair and impartial answer to the question. Some time ago I undertook a series of experiments on a plan somewhat different from those which had been followed elsewhere, in order to find whether plants could, when a fair chance was allowed them, gather any considerable quantity of nitrogen directly from the air. For this purpose peas were grown in sand, to which were applied solutions containing the essential ingredients of their food, including

larger and smaller quantities of nitrogen. The quantities of nitrogen in the seed and in the solution at the beginning of the experiments were accurately determined by chemical analysis. The amounts in the plants at maturity and in the soil and the amount remaining behind in the sand were also determined. The plants were grown in the open air, but were protected from rain and dew.

If the plants should be found to contain, at the end of the experiment, more nitrogen than was supplied them in the nutritive solution and in the seed, we should be forced to conclude that the excess must have come from the atmosphere, since there was no other possible source. As a matter of fact I found a large excess of nitrogen, so large, indeed, that it very much surprised me, and though there was no apparent source of error in the experiments, yet I refrained from saying much about them until the next year, when I repeated the trials on a larger scale and obtained a still more striking gain of nitrogen. Every precaution was taken to insure the correctness of the results. In some cases, for special reasons, the arrangements were such as to prevent the normal growth of the plants. In these the gain of nitrogen was small, and in one or two cases there was an actual loss, which, however, can be easily explained, and indeed is explained, I think, by some further experiments which I hope soon to publish. But in every case where the plants had a fair chance the gain of nitrogen from the air was large.

In the cases in which the conditions of growth were most nearly normal, one-half of the whole nitrogen of the plants was acquired from the air. The plants contained two parts, by weight, of nitrogen, for every one supplied in nutritive solution and seed, and, what is still more remarkable, they did this not only when the amount of nitrogen was small, but when it was very much larger. Comparing the area of the pots in which the plants were grown with an acre, the pea plants acquired an amount of nitrogen from the air equivalent to twice the total nitrogen of a wheat crop of thirty bushels per acre and equal to that of a crop of three tons of clover hay.

So, then, the short of the story is, that these plants, peas, persisted in acquiring a considerable quantity of nitrogen in some way or other from the air, provided a part of what they needed was supplied to their roots. My own inference is, that other plants may be fairly assumed to have the same power that these peas had, and that probably such plants as clover, which are known to obtain nitrogen in a

remarkable way from natural sources, may get part of their supply from the air. The results of the field experiments with corn, of which I have told you, lead me to suspect that corn may be possessed of this property, though of course I can affirm nothing about it.

Such is my view. On the other hand, Messrs. Lawes and Gilbert are, or at least have been until lately, very firm in the conviction that plants in general are practically restricted to the soil as the source of their nitrogen.

They have, however, with the true scientific spirit, always refrained from positively affirming that this is the case, and some of the late writings of Sir John Lawes, which you may have seen, seem to me to imply that he is less strenuous on this point than he formerly has been.

In so far as I am able to separate myself from my own peculiar views, and to state fairly the actual condition of the question, it is about this: A large number of carefully conducted experiments in the green-house and in the field have made it appear extremely probable that the soil is the source of all but extremely small quantities of the nitrogen of plants, but there are numerous observations which imply that certain legumes especially can hardly obtain all of their nitrogen in this way, and the experiments which I have described to you imply that some plants at least, may in some way acquire nitrogen from the air. The question, however, demands further study.

A member.—Which is the cheapest source of nitrogen?

Prof. Atwater.—If by that you mean in what fertilizing material can nitrogen be had at the lowest cost per pound, I would refer you to Mr. Mapes here, who knows the fertilizer market as I do not. Mr. Mapes, what is the cheapest form?

Mr. Mapes.—I should say dried blood.

Prof. Atwater.—Mr. Mapes says that, in dollars and cents, dried blood is probably the cheapest form in which nitrogen could be bought, though from his tone I infer that there is very little difference between that and other common nitrogenous materials, as regards the cost of the nitrogen they contain.

Mr. Minch.—Taking nitrogen in the different forms—nitrate of soda, sulphate of ammonia, and dry blood—which is the best? Taking them pound for pound, which is the best?

Prof. Atwater.—You ask if a pound of nitrogen is worth more in one way than in another?

Mr. Minch.—Which is the cheapest?

Prof. Atwater.—How is that, Dr. Cook?

Prof. Cook.—I think they are about the same.

Prof. Atwater.—There seems to be a misunderstanding about the question. As I understand it, it is this—is the agricultural value more in one form than in another?

Mr. Minch.—The question is this, “If a farmer buys one dollar’s worth of each, from which will he obtain the best results?”

Prof. Atwater.—That depends upon how many pounds of nitrogen he gets in each for his dollar, and upon the relative values per pound for his use.

Mr. Minch.—We have a certain fixed value for each—for the ammonia in each. I ask what would be the average commercial value of one compared with the other. Taking the figures at which the different forms are sold, which would give the most value for the least money?

Prof. Atwater.—Is there any such difference in the ruling rates in the different forms of this material? Does a pound of nitrogen cost more in the one shape than in the other?

Prof. Cook.—These prices vary all the time. It depends upon the purpose to which he wishes to put it.

Prof. Atwater.—The question, as I understand it, is, How can you best invest a dollar for nitrogen? That involves two questions. How much nitrogen do you get? and What is the relative agricultural value of the different forms? As I understand the matter, the current rates at which fertilizers are now offered in New Jersey, are such as to make a pound of nitrogen cost about as much, say in dried blood or in sulphate of ammonia, as in nitrate of soda.

Prof. Cook.—There is very little difference between nitrogen in blood and nitrogen in nitrate of soda. The prices of nitrogen are very low—lower than they have been for twenty years.

Prof. Atwater.—Then a pound of nitrogen to-day costs about the same in each.

Prof. Cook.—Yes, sir.

Prof. Atwater.—Then suppose we get the same number of pounds for a dollar, which is of the most value?

Prof. Cook.—The nitrate of soda is not so likely to be washed out of the soil.

Prof. Atwater.—Is that your understanding of it, Mr. Mapes?

Mr. Mapes.—I think it is not so likely to be washed out of the soil.

Prof. Atwater.—Mr. Mapes, I think, speaks very justly there, but at the same time I am not inclined to lay so much stress upon this washing out of the soil if the nitrate is applied when the plants are ready to use it and the soil is not very sandy.

If you want proof that nitrate of soda is worth the most, I can show you a long list of experiments which would go to show that such is the case. If you wish to establish that sulphate of ammonia or dried blood brings the best results, I can show you a long line of experiments which favor that view; and if you favor the idea that the three together are better still, I can give you still another long list of experiments which go to show this, too. [Laughter.] I don't know whether I have answered your question or not, sir. [Laughter.] Taking all in all, I am inclined to think that very much depends on soil and season. But as a rule I should prefer a mixture to any single ingredient.

A member.—Where can we get the cheapest supply of phosphoric acid?

Prof. Atwater.—That depends upon the man. [Laughter.] I don't know that this would have any influence on the value with you. So far as regards this, I will give you the testimony of Mr. Fairchild, a gentleman near Middletown, Conn., who has been studying this, with other questions, for a number of years, by a series of most accurate experiments. He has tried the experiment with potash and bone, side by side. Just before I came away I sent him a letter, asking him for the results of his experiments, and he wrote me about it.

The substance of it is this. He says: "I find that if I buy superphosphates I pay for my phosphoric acid some 10 cents a pound, or thereabouts."

A Member.—Nine cents.

Prof. Atwater.—"Whereas, in bone I can get it for about a half or two-thirds as much. I have made experiments for eight years, and the outcome of these is this, that, whether it be in the production of corn, or of potatoes, or of oats or wheat, a pound of phosphoric acid in the form of bone gives me just as much increase of crop as a pound in the form of phosphates. This is the result of these experiments."

From what I have observed I should say that for immediate action superphosphate would be best, unless the bone were extremely fine.

If you want something to last year after year, bone will give you for less money the same permanent effects.

Mr. Roberts.—In what form is the best bone; in what shape does it come?

Prof. Atwater.—Will Prof. Cook answer that question?

Prof. Cook.—The proper kind of bone is that got from the mill. It is ground bone. It is the rough bones ground up.

Mr. Carson.—Is a pound of soluble phosphoric acid from the rock worth as much as a pound from the bone?

Prof. Atwater.—I should say it would be, taking it in the long run. I answer as a theorist, however. I only know from experiments. I find conflicting results in these experiments at times. As the general outcome I should say, that for lasting effect there would be very little difference. For immediate effect, unless the bone was very fine, you would get better results—the best results, from the soluble phosphoric acid in the rock. What the effect would be if the bone was ground I cannot tell you. I don't believe very much, I don't believe there is a great deal of difference in the value of the two. Ask Dr. Cook or Mr. Mapes.

Mr. Carson.—I suppose he would say that fertilizer derived from the bone was worth more than that derived from the rock.

A Member.—What is the cheapest way to purchase potash?

Prof. Atwater.—The cheapest form is the muriate. The best form depends upon circumstances. If you want the largest amount for a dollar, you had better get the muriate than any other form.

A Member.—Is there a great deal of potash in kainit?

Prof. Atwater.—In kainit you have about twelve or thirteen per cent. of potash, and, with its compounds of magnesia and common salt, sometimes these latter may add very materially to its value.

Mr. Denise.—There are several other matters which ought to be brought up.

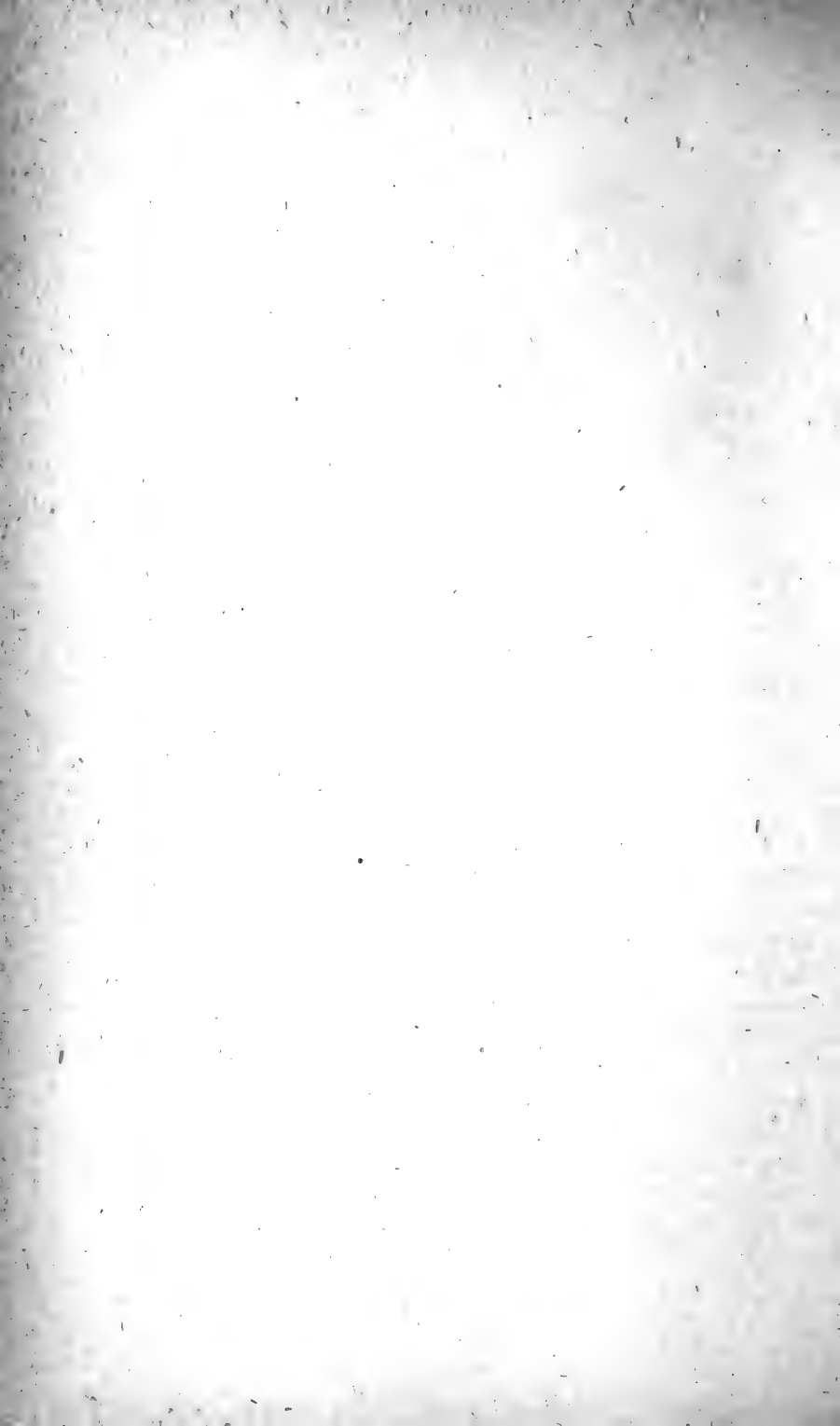
I move that the several papers be referred to the Executive Committee, to be prepared by them for publication in our proceedings, or such parts of them as they may submit.

Mr. Rogers.—I would now move you that a vote of thanks be tendered Prof. Atwater for his very entertaining and instructive lecture.

Unanimously carried.

FOOD EQUIVALENTS.

BY SIR J. B. LAWES, BART., LL.D., F.R.S.



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Two years ago the British Parliament passed an act by which tenant farmers were entitled to receive compensation for unexhausted manures on leaving their farms. Before, however, the claim could be established it was necessary for them to satisfy arbitrators or judges that such manures not only existed in the soil, but also that they possessed the value claimed for them. Of the claims made, so far as my experience has gone, the result has been by no means satisfactory to the tenants, and an opinion generally prevails that the benefits to be derived from the act are very much less than what was anticipated when it was passed.

The science of Agriculture will have to pass through several generations of progress before it will be in a position to pronounce with any certainty as to the locality and the value of the various substances applied in manures to the soil. The fond belief which once prevailed, that if the manures applied were not taken up by the crops they must still exist in the soil, has been rudely disturbed by the discovery of nitrification. That the annual amount of organic matter nitrified each year is more or less a measure of the soil's fertility would appear to come under the head of a general law. It cannot be an accidental circumstance that all the cereal crops grown with mineral manures on my land have declined in yield, more especially when analyses of the soil have proved with certainty that its organic nitrogen has also largely declined. Nor would the fact that mineral manures in certain localities have produced largely increased crops be sufficient to disturb the above conclusion, as their application may have had the effect of inducing more active nitrification.

It is true that the experiments on corn which have been tried in the States do not give much encouragement to the idea that this magnifi-

cent cereal feeds in a similar manner to that of its more humble brethren; still, I should require more careful and longer extended experiments to satisfy me that plants of the same natural order had different modes of taking their food from the soil.

While nitric acid has no permanent resting place in a soil, and ammonia is rapidly converted into nitric acid, organic nitrogen—or, in other words, nitrogen in combination with carbon—has a durability which may be measured by days or by centuries. It is the uncertain degrees of durability in the manures from cattle foods which are employed by the British farmer that, on the one hand give him an equitable, as well as a legal claim for compensation, but on the other hand place serious obstacles in his way when he attempts to enforce his claim. It was with the hope of rendering some assistance to the farmer that we recently wrote a paper on this subject, and although the subject generally has only a local interest, still there are some parts which may, I hope, possess a certain interest to the farmers of the United States.

It must be evident that whenever a food is consumed by stock a certain portion of it must be retained by the animal, and that this portion will vary with the composition of the food. It was therefore necessary to construct a table to show, first, the chemical composition of the various foods in use; secondly, their feeding properties, and the amount of ingredients which the animals consuming these foods were likely to retain in their system; while the third part of the table gave the amount of manure ingredients which might be expected to pass through the animal, and on these we place a value calculated from the prices at which they could be purchased in the form of artificial manures. The table referred to will be found on pages 116 and 117.

It is quite obvious that in the construction of a table of this description we lay ourselves open to criticism of various kinds. The chemist may call the figures in question as not being in accordance with the chemical composition of the foods; while the practical farmer may say that he knows much better than we do that such results cannot be obtained in his feeding sheds. To one and the other we can give but one and the same answer, which is to this effect: that we know ourselves—perhaps better than they do—the imperfections which are to be found in the table, but that its construction is the result of the best data at our command, and that as knowledge and experience advance the various items can be corrected and amended.

In making use of food equivalents, or in other words in selecting from the table the number of any of the foods required to produce one pound of increase, it is necessary to understand that the results can only be obtained by a judicious use of the various foods. An ox could not be kept alive on linseed alone, and if fed upon straw alone a ton of this substance would be more likely to produce no increase than the amount of pounds given in the table. Therefore now to give a few illustrations of increase upon foods, to show how the figures are applicable to the ordinary practice of farming.

Many years ago we conducted a series of experiments upon various breeds of sheep, thirty of each breed being in most cases selected, and the system of feeding was such as any ordinary farmer would employ when fattening his sheep for market. For each experiment the foods were carefully weighed, and a fixed amount of cake, or meal and hay, was supplied, but the animals were allowed to eat as many Swedish turnips as they liked. The following table gives the amount of food consumed by each breed of sheep to produce 100 lbs. increase in their live weight, as given in the table published in 1861, and also the amount of increase which the same amount of food should give, if calculated according to the present table :

DESCRIPTION OF SHEEP.	FOOD CONSUMED TO PRODUCE 100 LBS. INCREASED LIVE WEIGHT.			INCREASE WHICH THE SAME SHOULD HAVE PRO- DUCED IF CALCULATED BY TABLE OF FOOD EQUIVA- LENTS
	Oil cake lbs.	Hay chaff lbs.	Swill lbs.	
Hampshire Downs...	292	261	3,967	102
Sussex Downs.....	297	255	3,536	103
Cotswold	254	217	3,555	59 $\frac{1}{4}$
Leicester.....	264	251	3,761	95 $\frac{1}{2}$
Cross Bred Wethers..	264	252	3,725	95
Cross Bred Ewes.....	264	250	3,671	94 $\frac{1}{4}$
				Mean..... 96 $\frac{1}{2}$

Taking the mean of the six breeds, we find that the food, which under experiment actually produced 100 lbs. of increase on the aver-

TABLE I.—SHOWING THE DATA, THE METHOD, AND THE RESULTS, OF THE ESTIMATION

Numbers.	DESCRIPTION OF FOOD.	Fattening Increase in Live Weight. (Oxen or Sheep)		NITROGEN.						
				In Food.		In Fattening Increase (at 1.27 Per Cent.)		In Manure.		
		Food to One In- crease.	Increase per Ton of Food.	Per Cent.	Per Ton.	From One Ton of Food.	Per Cent. of Total Consumed.	Total Remaining for Manure.	Nitrogen Equal Ammonia.	Value of Ammo- nia at 6d. per lb.
			lbs.	per c't.	lbs.	lbs.	per c't.	lbs.	lbs.	£ s. d.
1	Linseed	5.0	448.0	3.60	80.64	5.69	7.06	74.95	91.0	2 5 6
2	Linseed-cake	6.0	373.3	4.75	106.40	4.74	4.45	101.66	123.4	3 1 8
3	{Decorticated} cotton-cake....}	6.5	344.6	6.60	147.84	4.38	2.96	143.46	174.2	4 7 1
4	Palm-nut cake.....	7.0	320.0	2.50	56.00	4.06	7.25	51.94	63.1	1 11 7
5	{Undecorticated} cotton-cake....}	8.0	280.0	3.75	84.00	3.56	4.24	80.44	97.7	2 8 10
6	Cocoa-nut cake.....	8.0	280.0	3.40	76.16	3.56	4.67	72.60	88.2	2 4 1
7	Rape-cake.....	(10)	(224)	4.90	109.76	2.84	2.59	106.92	129.8	3 4 11
8	Peas.....	7.0	320.0	3.60	80.64	4.06	5.03	76.58	93.0	2 6 6
9	Beans.....	7.0	320.0	4.00	89.60	4.06	4.53	85.54	103.9	2 11 11
10	Lentils.....	7.0	320.0	4.20	94.08	4.06	4.32	90.02	109.3	2 14 8
11	Tares (seed).....	7.0	320.0	4.20	94.08	4.06	4.32	90.02	109.3	2 14 8
12	Indian corn.....	7.2	311.1	1.70	38.08	3.95	10.37	34.13	41.4	1 0 9
13	Wheat.....	7.2	311.1	1.80	40.32	3.95	9.80	36.37	44.2	1 2 1
14	Malt.....	7.0	320.0	1.70	38.08	4.06	10.66	34.02	41.3	1 0 8
15	Barley	7.2	311.1	1.65	36.96	3.95	10.69	33.01	40.1	1 0 1
16	Oats	7.5	298.7	2.00	44.80	3.79	8.46	41.01	49.8	1 4 11
17	Rice meal.....	7.5	298.7	1.90	42.56	3.79	8.91	38.77	47.1	1 3 6
18	Locust beans.....	9.0	248.9	1.20	26.88	3.16	11.76	23.72	28.8	0 14 5
19	Malt coombs.....	8.0	280.0	3.90	87.36	3.56	4.08	83.80	101.8	2 10 11
20	Fine pollard.....	7.5	298.7	2.45	54.88	3.79	6.91	51.09	62.0	1 11 0
21	Coarse pollard.....	8.0	280.0	2.50	56.00	3.56	6.35	52.44	63.7	1 11 10
22	Bran.....	9.0	248.9	2.50	56.00	3.16	5.64	52.84	64.2	1 12 1
23	Clover hay.....	14.0	160.0	2.40	53.76	2.03	3.78	51.73	62.8	1 11 5
24	Meadow hay.....	15.0	149.3	1.50	33.60	1.90	5.65	31.70	38.5	0 19 3
25	Pea straw.....	16.0	140.0	1.00	22.40	1.78	7.95	20.62	25.0	0 12 6
26	Oat straw.....	18.0	124.4	0.50	11.20	1.58	14.11	9.62	11.7	0 5 10
27	Wheat straw.....	21.0	106.7	0.45	10.08	1.36	13.49	8.72	10.6	0 5 4
28	Barley straw.....	23.0	97.4	0.40	8.96	1.24	13.84	7.72	9.4	0 4 8
29	Bean straw.....	22.0	101.8	0.90	20.16	1.29	6.39	18.87	22.9	0 11 6
30	Potatoes.....	60.0	37.3	0.25	5.60	0.47	8.39	5.13	6.2	0 3 1
31	Carrots	85.7	26.1	0.20	4.48	0.33	7.37	4.15	5.0	0 2 6
32	Parsnips.....	75.0	29.9	0.22	4.93	0.38	7.71	4.55	5.5	0 2 9
33	Swedish turnips....	109.1	20.5	0.25	5.60	0.26	4.64	5.34	6.5	0 3 3
34	Mangel wurzels....	96.0	23.3	0.22	4.93	0.30	6.09	4.63	5.6	0 2 10
35	Yellow turnips.....	133.3	16.8	0.20	4.48	0.21	4.69	4.27	5.2	0 2 4
36	White turnips.....	150.0	14.9	0.18	4.03	0.19	4.71	3.84	4.7	0 2 7

FOOD EQUIVALENTS.

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OF THE ORIGINAL MANURE VALUE OF CATTLE FOODS AFTER CONSUMPTION.

PHOSPHORIC ACID.						POTASH.											Total Original Manure Value per Ton of Food Consumed.
In Food.		In Fattening Increase (at 0.86 Per C't.)		In Manure.		In Food.		In Fattening Increase (at 0.11 Per C't.)		In Manure.							
Per Cent.	Per Ton.	From One Ton of Food.	Per Cent. of Total consumed.	Total Remaining for Manure.	Value at 3d. per lb.	Per Cent.	Per Ton.	From One Ton of Food.	Per Cent. of Total Consumed.	Total Remaining for Manure.	Value at 2½d. per lb.						
per c't.	lbs.	lbs.	per c't.	lbs.	s. d.	per c't.	lbs.	lbs.	per c't.	lbs.	s. d.	£ s. d.					
1.54	34.50	3.85	11.16	30.65	7 8	1.37	30.69	0.49	1.60	30.20	6 3	2 19 5					
2.00	44.80	3.21	7.17	41.59	10 5	1.40	31.36	0.41	1.31	30.95	6 5	3 18 6					
3.10	69.44	2.96	4.26	66.48	16 8	2.00	44.80	0.38	0.85	44.42	9 3	5 13 0					
1.20	26.88	2.75	10.23	24.13	6 0	0.50	11.20	0.35	3.13	10.85	2 3	1 19 10					
2.00	44.80	2.41	5.38	42.39	10 7	2.00	44.80	0.31	0.69	44.49	5 11	3 5 4					
1.40	31.36	2.41	7.63	28.95	7 3	2.00	44.80	0.31	0.69	44.49	9 3	3 0 7					
2.50	56.00	1.93	3.45	54.07	13 6	1.50	33.60	0.25	0.74	33.35	6 11	4 5 4					
0.85	19.04	2.75	14.44	16.29	4 1	0.96	21.50	0.35	1.63	21.15	4 5	2 15 0					
1.10	24.64	2.75	11.16	21.89	5 6	1.30	29.12	0.35	1.20	28.77	6 0	3 3 5					
0.75	16.80	2.75	16.37	14.05	3 6	0.70	15.68	0.35	2.23	15.33	3 2	3 1 4					
0.80	17.92	2.75	15.35	15.17	3 9	0.80	17.92	0.35	1.95	17.57	3 8	3 2 1					
0.60	13.44	2.68	19.94	10.76	2 8	0.37	8.29	0.34	4.10	7.95	1 8	1 5 1					
0.85	19.04	2.68	14.08	16.36	4 1	0.53	11.87	0.34	2.86	11.53	2 5	1 8 7					
0.80	17.92	2.75	15.35	15.17	3 9	0.50	11.20	0.35	3.13	10.85	2 3	1 6 8					
0.75	16.80	2.68	15.95	14.12	3 6	0.55	12.32	0.34	2.76	11.98	2 6	1 6 1					
0.60	13.44	2.57	19.12	10.87	2 8	0.50	11.20	0.33	2.94	10.87	2 3	1 9 10					
(0.60)	(13.44)	2.57	(19.12)	(10.87)	(2 8)	(0.37)	(8.29)	0.33	(4.00)	(7.96)	(1 8)	(1 7 10)					
.....	.....	2.14	.....	.....	.....	.....	.....	0.27	.....	.....	.....	.....	
2.00	44.80	2.41	5.38	42.39	10 7	2.00	44.80	0.31	0.69	44.49	9 3	3 10 9					
2.90	64.96	2.57	3.96	62.39	15 7	1.46	32.70	0.33	1.01	32.37	6 9	2 13 4					
3.50	78.40	2.41	3.07	75.99	19 0	1.50	33.60	0.31	0.92	33.29	6 11	2 17 9					
3.60	80.64	2.14	2.65	78.50	19 8	1.45	32.48	0.27	0.83	32.21	6 8	2 18 5					
0.57	12.77	1.38	10.81	11.39	2 10	1.50	33.60	0.18	0.54	33.42	7 0	2 1 3					
0.40	8.96	1.28	14.28	7.68	1 11	1.60	35.84	0.16	0.45	35.68	7 5	1 8 7					
0.35	7.84	1.20	15.31	6.64	1 8	1.00	22.40	0.15	0.67	22.25	4 8	0 18 10					
0.24	5.38	1.07	19.89	4.31	1 1	1.00	22.40	0.14	0.63	22.26	4 8	0 11 7					
0.24	5.38	0.92	17.10	4.46	1 1	0.80	17.92	0.12	0.67	17.80	3 8	0 10 1					
0.18	4.03	0.84	20.84	3.19	0 9	1.00	22.40	0.11	0.49	22.29	4 8	0 10 1					
0.30	6.72	0.88	13.10	5.84	1 5	1.00	22.40	0.11	0.49	22.29	4 8	0 17 7					
0.15	3.36	0.32	9.52	3.04	0 9	0.55	12.32	0.04	0.32	12.28	2 7	0 6 5					
0.09	2.02	0.22	10.89	1.80	0 5	0.28	6.27	0.03	0.48	6.24	1 4	0 4 3					
0.19	4.26	0.26	6.10	4.00	1 0	0.36	8.06	0.03	0.37	8.03	1 8	0 5 5					
0.06	1.34	0.18	13.43	1.16	0 4	0.22	4.93	0.02	0.41	4.91	1 0	0 4 7					
0.07	1.57	0.20	12.74	1.37	0 4	0.40	8.96	0.03	0.34	8.93	1 10	0 5 0					
(0.06)	(1.34)	0.14	10.78	1.20	0 4	(0.22)	(4.93)	0.02	0.34	4.91	1 0	0 3 11					
0.05	1.12	0.13	11.61	0.99	0 3	0.30	6.72	0.02	0.30	6.70	1 5	0 4 0					

age, produced only $96\frac{1}{2}$ lbs., or $3\frac{1}{2}$ less than 100 lbs. if calculated according to the table of food equivalents. It will be seen that the Sussex sheep—which are celebrated for producing a very high quality of mutton—required more food to produce their increase actually, and also if calculated by the food equivalents; while the Cotswold sheep—which are noted as a breed that fattens very rapidly, but produces a lower quality of mutton—consumed much less than the calculated equivalent of food.

As all these animals were selected with care for experimental purposes and were fed under cover, we might have anticipated that they would consume rather less food than sheep fed under ordinary circumstances.

As an example of feeding with oxen, I will take some experiments which I have recently published where silage made from red clover was compared with Swedish turnips and clover hay. The results are given in the following table.

Table giving the consumption of five oxen, fed for 114 days with linseed cake, barley meal and clover silage; and five oxen, fed with linseed cake, barley meal, sweets and clover hay:

	Cake, lbs.	Meal, lbs.	Hay, lbs.	Sweets, lbs.	Silage, lbs.	Actual increase, lbs.
5 oxen....	3,420	2,565	6,340	25,200	.....	1,474
5 oxen.....	3,420	2,565	.....	.....	38,080	1,547

According to the calculated increase from the foods consumed, as given in our table, the results should have been as follows:

	Lbs. increase.
Cake.....	530
Meal.....	355
Hay.....	455
Roots.....	258
Total.....	1,631

The real increase was 157 lbs. less than this. We have not made any attempt to calculate the food equivalent of silage. In this experiment, where the silage was very good, being made from pure red clover, it took about 61 lbs. to give 1 lb. increase of live weight, assuming that we allow the cake and meal to yield an increase in accordance with the calculated equivalents in our tables.

It may here be observed that in these experiments a considerable portion of uneaten food was weighed off each day. I am disposed,

however, to think that the real cause of the oxen not having increased as much as might have been expected, from the calculated equivalent of the food consumed, is due to the fact that they received too large an amount of cake and meal; $10\frac{1}{2}$ lbs. per day is probably rather more than can be used economically, unless when given quite at the end of the fattening period.

A short time ago, Mr. Morton Frewen furnished some particulars of the fattening of oxen, at Superior, Wisconsin, in cold-proof buildings, where 4,000 head are fed at one time. The following are the quantities of food which he states are consumed in fattening an ox:

	Pounds.	Calculated increase.
Maize	1,500	210
Oats.....	450	60
Linseed.....	168	33
Bran	450	50
Wheat screenings.....	600	41
Hay	1,500	100
		<hr/> 494

With regard to the wheat screenings, I have nothing to guide me as to their good properties except the price, which Mr. Morton Frewen gives as $\frac{1}{4}$ cent per lb.; this would be equal to \$5 per ton, while bran is valued by him at \$9 per ton. I have, therefore, calculated the food value in proportion to the difference in price. With regard to the increase in the oxen, Mr. Morton Frewen informs us that the lean oxen weigh 1,100 lbs., while when fat at Liverpool they will weigh 1,450 lbs., 100 lbs. having been lost in the transit, from shrinkage. The actual increase upon the food would therefore be 450 lbs., the calculated increase being 494 lbs. It is not probable that on these occasions the food is very accurately weighed; nor is it probable that the hay used would be equal in quality to the hay we have in England.

The examples given are sufficient to show that a good many precautions must be observed in order to obtain the best results from any food, or rather from any mixture of foods. When combined in the most suitable proportions, it is probable that the increase might be fully equal to that given in the table; but wherever the food was of too high or too low a quality, less favorable results would be obtained. In one case food is voided without being digested, and in the other the increase in the animal is too slow, while too much food is consumed in its mere sustenance.

The capacity of increase in an animal, as well as the cost of food in any locality, are matters of great importance. The rate of increase in oxen is less than in sheep, and in both it is considerably lower than it is in pigs.

In the States corn, as a rule, is relatively cheaper in proportion to fat stock than it is in England, and in consequence it can be used more liberally. Surprise is often expressed at the much higher prices which English farmers pay for linseed and cotton cake, as compared with corn; but the reason is to be found in the much higher manure value of the cakes. I have often wondered at the high prices which the United States farmer appears willing to pay for nitrogen in artificial manures, when he might obtain these manures at a much lower cost by simply feeding cotton seed and cotton cake.

Although the farmer's legal right to obtain compensation for the unexhausted residue of his manures gives to the subject in England an importance which it does not possess in the States, still a few of the leading facts upon which the principle of compensation is based may not be without interest. There is a good deal of land cultivated in Great Britain which is too poor to grow profitable crops without artificial fertility being imported on to the farm, even when it is only the grain of two years out of four that is sold off the farm, while the straw of the grain crops with the turnips and clover are consumed on the farm.

This fertility very often consists of linseed, and cotton seed cakes. The nitrogen contained in these goods—with the exception of the small amount retained by the animal—passes into the excrements in the form of organic compounds of nitrogen. These compounds vitrify in the soil with very different degrees of rapidity. A certain portion of those found in the urine vitrify very readily, while some of those in the solid excrements may remain for several years in the soil.

Experience has shown that when these foods are used upon a poor soil for the first time, their effect is not at first equal to what it becomes later on, when they have been in use for a few years. This is due to the slow decay of some of the compounds. A crop grown by the eighth application of cake may be in part grown by small portions of the cake used in each of the previous seven applications. The ultimate decay of organic substances in the soil must depend therefore upon a great variety of circumstances, and our own experiments at

Rothamsted supply numerous instances of the very long period which may elapse before some manures cease to produce an effect upon the crops to which they have been applied.

The period which we assumed in our calculation as that when all manure effects would cease was eight years after the application, but this was merely an arbitrary figure, and not in any way based upon direct experiment. The evidence which we do possess, which bears upon the accumulation of organic compounds in the soil, is to the effect that when rape cake is applied every year to grow barley—although in proportion to the nitrogen it contains it increases the crop nearly as much as an equivalent amount of nitrogen applied in the form of salts of ammonia, or nitrate of soda—it leaves a residue of nitrogen in the soil which, in the course of time, accumulates sufficiently to be estimated by analysis, while no such accumulation is shown by the other manures.

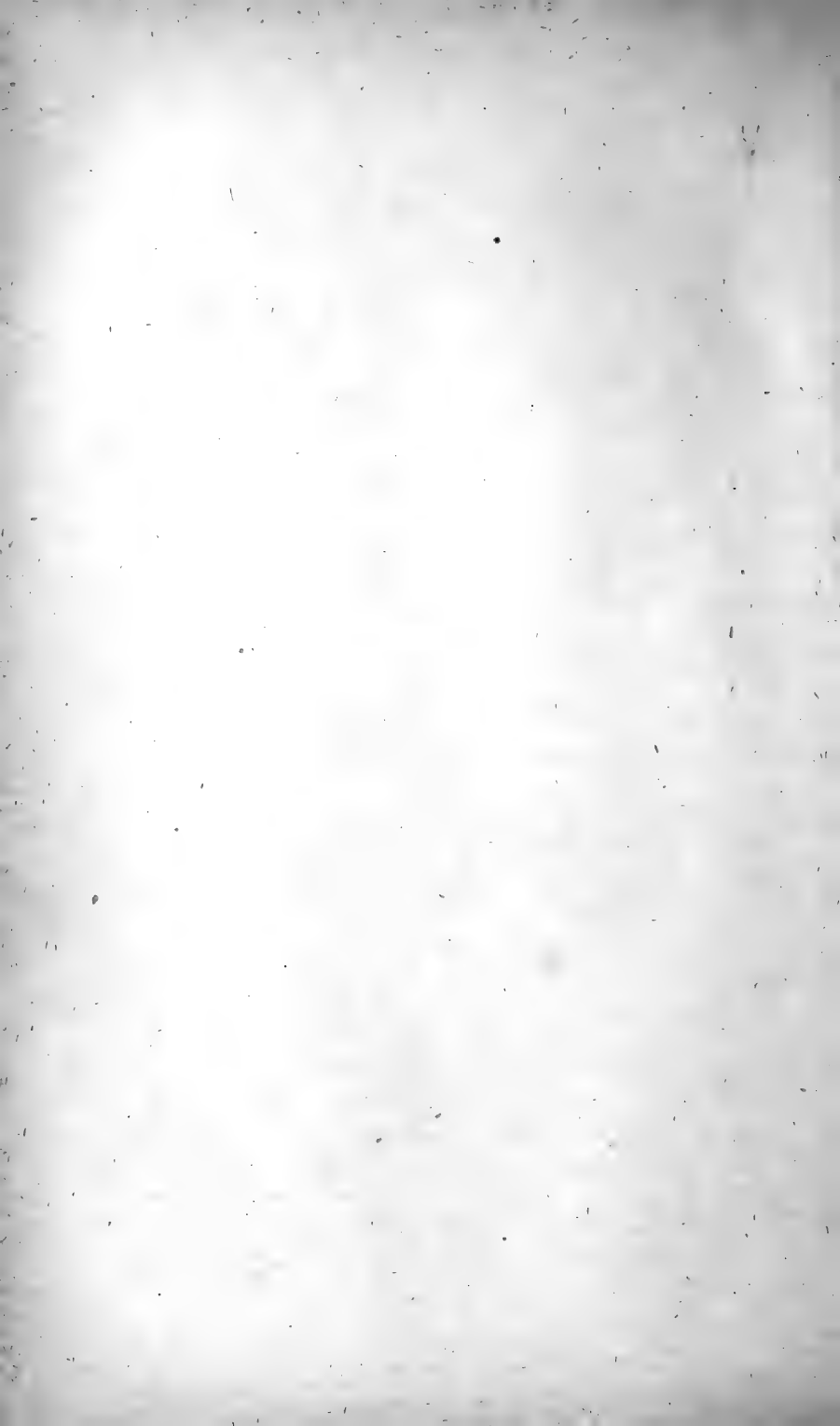
Farm-yard dung also leaves a residue, which is exceedingly difficult to take out again, and straw, which constitutes the larger portion of dung, is very slowly decomposed in the soil.

The employment of manures such as salts of ammonia or nitrates, which do not accumulate in the soil, may still be indirectly the means of accumulating organic compounds there, as, when applied to cereal crops, they largely increase the straw, and this straw is, in its turn, converted into manure. Nitric acid, which itself is not an organic compound, is the beginning and end of an innumerable series of organic compounds, of which those under the soil are probably the least known.

This will be the subject to which agricultural science must now be directed. The action of manures has occupied a large portion of our time in the past generation. The soil must be the work of those who wish to advance science in the next generation.

EXPERIMENTS WITH POTATOES.

BY N. W. PARCELL, OF ELIZABETH, UNION COUNTY.



EXPERIMENTS WITH POTATOES.

TO TEST THE QUALITY, TIME OF RIPENING, PRODUCTIVENESS, AND
ALSO THE BEST TO GROW FOR MARKET IN HIS LOCALITY.

BY N. W. PARCELL, OF ELIZABETH, UNION COUNTY.

The soil on which the potatoes were grown is, I think, more fertile than the average of farm lands. It is also heavy, with clay subsoil, and is underlaid, about three feet from the surface, with shale, and so situated that with ordinary rains the water soon runs off. It had been in meadow eight years previous to the month of June, 1884, when it was plowed and 600 pounds of slug dust from the Elizabeth Glue Works, and 300 pounds of sulphate of potash sown broadcast per acre and harrowed in, and sowed with turnips in drills. In April, 1885, the ground was plowed as deep as it could be, without turning up the subsoil, and I thought it was in good condition to grow a crop of potatoes, as the old sod had rotted sufficiently, so that they would get the benefit of it. The following compost, composed of 600 pounds of bone-dust, 300 pounds of muriate of potash, two tons of stable manure, and two tons of earth, mixed together under cover and turned until it ceased to heat. This was applied broadcast per acre, and harrowed in. The rows were marked out with a Darnell marker, three feet apart, and five inches in depth. The seed pieces were cut from smooth, medium-sized potatoes, one eye on a piece, rolled in plaster, and dropped fifteen inches apart in the row, with the exception of the early Ohio, which were cut two eyes on a piece and dropped twelve inches apart. They were then covered with two inches of earth and Forrester's potato manure spread about one foot in width on the row, at the rate of 1,200 pounds per acre, and covered with a plow on April 28th. May 11th the Thomas harrow was run over them lengthwise, so that the ridges were nearly level with the surface of the ground.

As soon as the potatoes could be seen in the row, they were plowed with a cabbage plow, from the row, as close as possible and deep ; then they were immediately plowed to the row, to prevent the roots of the potato from being exposed to the air and sun. From that time the cultivator was run between the rows once a week until the first of July, when they were hoed by hand, and hilled with a moulding plow. The vines were Paris-greened twice. There were two rows 300 feet in length of each variety. In digging, there was 100 feet in length, measured in the middle of one row of each variety. The potatoes were dug and left to dry, so that no dirt would stick to them. They were then weighed and the calculation made what the yield would have been per acre in bushels, counting sixty pounds to the bushel (provided there had been an acre of each variety), with the following results. In the outside columns I give, for comparison, the time of ripening and yield of 1884, all the varieties embraced in the trial of 1885, with the exception of Late Rose and Clark's No. 1, which were not weighed or measured in 1884. I do not think, however, that the yield of either was more than 150 bushels per acre, and the quality was poor :

	1885.		1884.	
	Time of ripening.	Yield in bushels.	Time of ripening	Yield in bushels.
	Days.		Days.	
Early Ohio.....	112	242	104	290
Early Vermont.....	120	305	110	225
Beauty of Hebron	120	421	110	201
Watson's Seedling.....	120	413	115	249
Lee's Favorite.....	120	295	115	469
Rosy Morn.....	120	316	120	532
Early Rose.....	126	378	120	325
Queen of the Valley.....	130	379	120	356
American Magnum Bonum.....	130	280	124	261
Vermont Champion.....	132	542	122	456
Mammoth Pearl.....	132	488	122	401
Burbank.....	132	488	122	326
White Star.....	132	355	122	291
White Elephant.....	132	321	122	271
St. Patrick.....	132	454	122	292
O. K. Prolific.....	132	343	122	251
Late Rose.....	132	520	.....	.....
Clark's No. 1.....	132	405	.....	.....

The fractional parts of a bushel I have omitted, as I thought they would be of no practical value. There were few small potatoes in any of the varieties and they were all very smooth and free from scab.

The quality for eating was excellent for their kind. My mind has not changed as to quality of the different varieties from last year, 1884. Beauty of Hebron stands first; Early Vermont and Watson's Seedling, second; Early Rose, Rosy Morn and Lee's Favorite, third; Early Ohio, Queen of the Valley, Burbank and White Star, fourth;

Vermont Champion, Mammoth Pearl, White Elephant, St. Patrick, Magnum Bonum and O. K. Prolific, fifth. I will here state that the table qualities of Late Rose and Clark's No. 1, last year, 1885, were excellent. I will also state that the yield of Early Rose, adjoining the experiment plot, where the soil was not so deep and fertile, with ten two-horse loads of rotted stable manure per acre, and one-half of the piece manured with Forrester's Potato Manure, and the other half with E. Frank Coe's Excelsior Guano, at the rate of 800 pounds to the acre in addition to the stable manure—the manures applied, the potatoes cut, dropped and covered, and the cultivation done in the same manner as before mentioned in the above plot—was 225 bushels per acre, by estimation. I stated last year that I did not think much information could be obtained from a trial of one year as to the productiveness of the different varieties of potatoes, or that one could tell which of the early kinds would be the earliest. I am now satisfied that the Early Ohio is the earliest potato that I have grown. Of the other early kinds I do not know, and it can make little difference as the time of ripening is so nearly the same.

What can be said about the productiveness? One year some one of the early varieties will be the most productive and another the least; the next year the variety that was the least will be the most productive; and it is the same with the late varieties. What is the cause and the remedy? I think the cause is in the soil, and in the climatic changes of the seasons. The remedy I do not know.

For market I find none better than the Early Rose. In my trials of several years it has not been up to the average, but has been more uniform in yield; is good in quality, and it has a better name than any other variety and will bring a better price.

Finally, I think the cooking qualities of New Jersey potatoes are not excelled by those grown in any other State in the Union.

SHEEP HUSBANDRY.

BY JEREMIAH M'CAIN, OF MOUNT HERMON, N. J.



SHEEP HUSBANDRY.

BY JEREMIAH M'CAIN, OF MOUNT HERMON, N. J.

GENTLEMEN—By your request I will, in a brief way, make a few statements in regard to sheep husbandry from my own personal experience, and to show how we have improved sheep and how we have gained in size, quality, and early maturity. We now get them at two years old almost fully developed.

To illustrate and make things plain, I will go back to 1839.

The only sheep, then, of improved breeds that I could hear of in our State were near Clinton, in Hunterdon county. They had been imported as a foundation for building up a flock of Bakewells, they having been imported direct from Mr. Bakewell, of England.

My brother and I commenced farming in 1839, each finding his own stock, but the grain we raised was in partnership.

I heard of those sheep and I wanted my brother to go in company with me and get three—two ewes and a ram—and we could start a flock; but he refused. Well, I went, against all kinds of opposition, and got the three; and on my return with them many came to see them, and all pronounced them very fine. When I told them the price I gave—\$10 each, then they were astonished; but the following year showed old and young farmers something new. I sold a part of my lambs, then half-breeds, for \$5 each to farmers as breeders. After selling those, a butcher came to buy of us both; he gave brother \$1.25 per head for his and \$2.50 for mine, and that settled things and showed the difference between common and improved stock, and they have steadily improved ever since.

Soon after that the Southdowns were imported and gave notoriety, but for some reason for a time they were slow of sale, till Mr. J. C. Taylor, of Holmdel, Monmouth county, N. J., commenced importing Southdowns. About 1855 he commenced by selecting from the

famous flocks of Mr. Jonas Webb, of Babraham, England. He then, with the advice and assistance of Col. Lewis G. Morris, of Fordham, N. Y., soon gave them credit, and they became in great demand; and when Mr. Taylor imported "World's Prize" and exhibited him at our State fair, and Mr. George Hartshorn imported "Young York" to beat "Prize," then they went in for improvement, and Mr. Taylor coming off victorious, this gave him plenty of customers at large prices, and he at once imported "Reserve" and several ewes. In 1860 and 1861, at the great closing-out sale of 967 head of Southdowns of Mr. Jonas Webb, Mr. Taylor put in his order to buy "No. 89" without limit to price. He was bid up to \$1,300 and struck off to Mr. Taylor's bid; and he bought two other rams and, I think, ten ewes at the same sale. I then purchased four Southdown ewes of Mr. Hartshorne in 1861; they were sired by "Young York" and out of imported ewes, and I took those ewes down to Mr. Taylor's rams and gave him \$10 each to be served by them, and I raised six lambs from them, and so I established my flock of Southdowns. And in 1863 I went to Canada and bought six ewes and a ram of Cotswolds, all very large and fine in quality. The ram clipped thirteen pounds of washed wool and the ewes nine and a half pounds each, and I sold the wool at 90 cents per pound. From those I made up my flock of Cotswolds, and from that time we have been importing and breeding with grand success.

In 1876 there was a large number imported of the various breeds of sheep, and to-day we represent nearly all the different breeds of large, fine and profitable sheep for our State, or any other State.

We now have the Southdowns, Oxford Downs, Hampshire Downs, Shropshires, and Cotswolds, all large, finely-formed sheep and good shearers; then we have the Merinos, or wool producers; they have no equals, as we have steadily improved our sheep in breeding. Our State has good reason to be proud of its sheep husbandry.

The climate and healthfulness of our State, as compared with other States, have no equal; no contagious diseases are known here; sheep that are diseased in other States, in some places to an alarming extent, with scab and hoof ail, when brought here will become sound and healthy in Northern New Jersey, in our healthy climate.

Now comes the inquiry as to which is the most profitable or best breed. This depends very much upon what they are intended for—whether for wool and heavy sheep at maturity, or for raising market lambs.

It is a well-known fact that many of our early lambs now raised in New Jersey are sold in the market in New York City, at two and a half to three months old, at \$8 to \$11 each. They have been selling for a few years readily at that, and why so few adopt the plan of raising them remains a mystery to me, as it requires no extra outlay to establish the business.

Mr. Devaney, who superintends Hon. H. C. Kelsey's interests on his Red Gate farm, in Sussex county, selects strong ewes of western grades, and uses Oxfords or Hampshire rams, and I think he told me he got \$11 per head for ninety or more of his crop of lambs, and an advance on the ewes he bred from.

A few others are now adopting the same plan and many more might. Many will be very cautious in selecting a good lot of ewes to breed from, and then take a very inferior ram to mate with them, and by so doing save three or four dollars, and lose at least one dollar on every lamb; for we know a ram has at least two-thirds of the influence on the increase.

Some people claim that sheep eat too close to the ground. If they have a supply of feed they are no harder on land than cattle, or any other farm stock. While most farmers compel their sheep to eat close or starve, others give the sheep the first feed and the cattle after them.

This reverse shows the difference; the manure from sheep has three times the influence on crops that barnyard manure has.

One great advantage in sheep is the little cost in the care of them. Any ordinary hand can do that during the season they run on pasture. No extra time need be lost in caring for them. Cows need much attention, and much expensive labor must be added to them, and they stand dry, many of them a long time, with no income whatever, while sheep are having a daily growth of wool to add to their profits, and ewes, after raising their lambs, will, with proper care, sell in market at an advance of 20 per cent. on first cost.

Wool, early in 1885, sold low, but has improved in price, and is now in good demand, and advancing in price.

Many are forcing their sheep on the market, and by so doing have kept the market crowded during the past year, at very low prices, and many will be losers by so doing.

My own experience in sheep husbandry is this: I have always kept one rule good, and that has been my success—to keep nothing of any breed but the best of its kind, for nothing inferior has much profit in it at any time.

The healthfulness of our State for sheep leaves no room for a veterinary surgeon to look after them for profit.

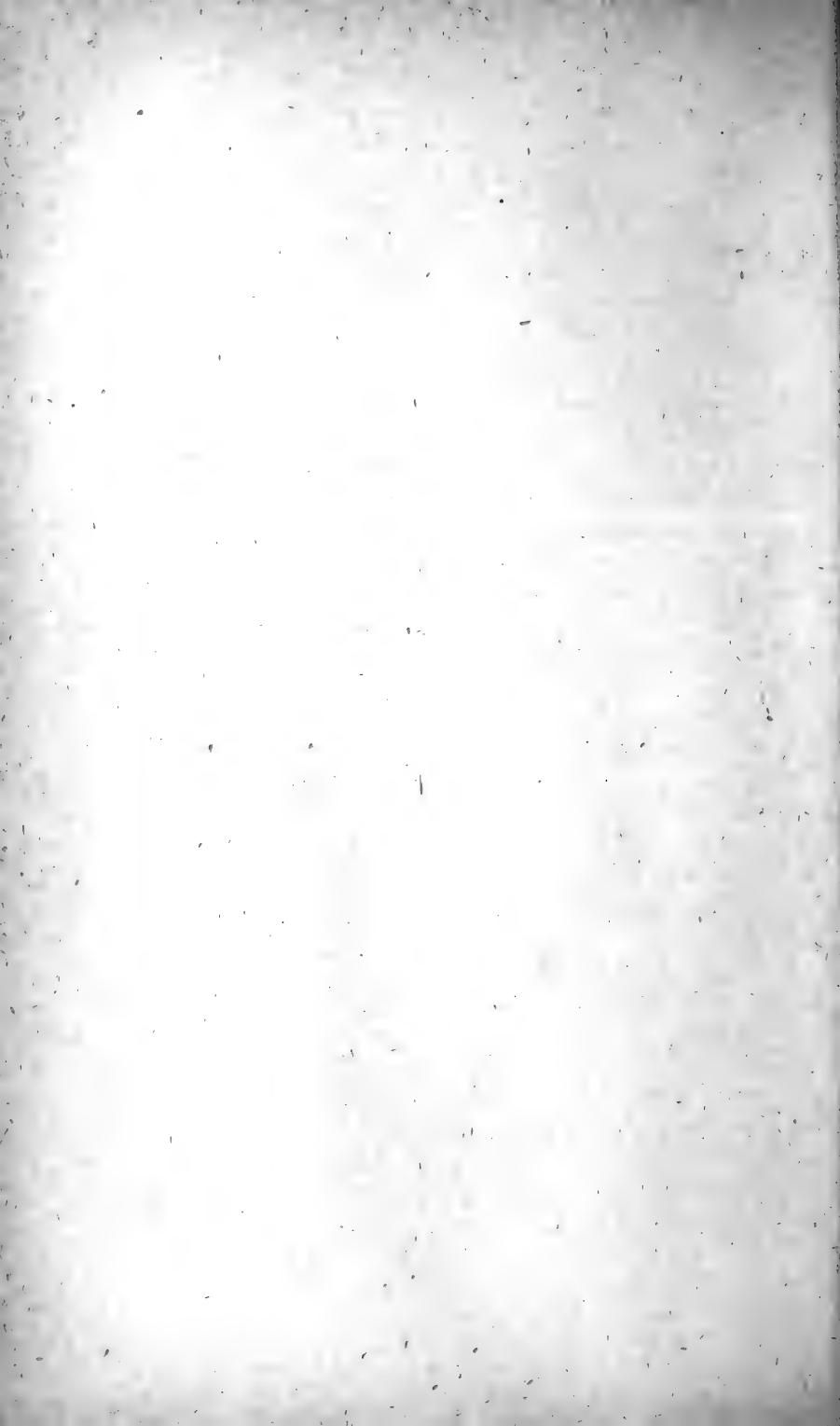
One thing, I think, we all lack in, is by not raising more roots of the different kinds for our sheep for winter feeding.

No one need keep poor sheep in New Jersey now, and if he does it is his own fault, when he can now obtain any of the different breeds if he chooses, at fair prices.

Much more might be added, but I close for this time.

HOG CHOLERA.

BY S. LOCKWOOD, D.V.S., OF WOODBRIDGE, N. J.



HOG CHOLERA.

BY S. LOCKWOOD, D.V.S., OF WOODBRIDGE, N. J.

For several years past a peculiar and very destructive disease known as hog cholera has appeared in various parts of the United States, and for the last two years has become very prevalent in New Jersey. The Legislatures of several States have appointed committees to investigate as to its cause and treatment, with a view to its arrest, and from their reports as well as private information we are enabled to form a very clear idea of several forms of the disease.

The name "hog cholera" is not well chosen, as it often conveys an erroneous impression of the disease, for it has little of the nature of cholera about it except its epizootic character.

Various causes have been given by different writers, all of which may be summed up in improper or unwholesome food, drink and surroundings, but by careful observations we find those that are kept on high, dry, clean pastures and those kept in close, filthy pens are alike attacked with this disease. We are therefore forced to believe the cause is due to some atmospheric germ that is poison to the swine race, causing a more or less rapid dissolution of blood and disorganization of tissue.

The symptoms are not always the same, but are varied by the mode of its localization upon the different organs.

The more early symptoms are: the eyes look dull and deep set in the head and the inner corner is gummed up; the animal seems dull and weak; he does not run to his feed, as usual, but comes slowly or not at all, eats but little, lies down most of the time, and tries to bury his head in the litter. These mild symptoms may continue for a day or more, when the disease presents a train of symptoms which are varied according to its localization.

If it be upon the brain with intensity the pig may give a sudden squeal, fall in convulsions and die in a few minutes.

If it be the spine, then the pig will get upon its front feet and only by the greatest exertion can it get upon its hind feet, if at all.

If it be the throat, the neck and ears swell, small ulcers appear on the lips, and in hogs of light color red patches appear on the skin, first about the parts most affected, later over the greater part of the body, gradually becoming of a bluish-black color. This discoloration of the skin is likely to be visible in all the advanced stages of the disease.

If it be the lungs, the breathing will be difficult, with a wheezy, laborious cough, with frothy saliva dribbling from the mouth.

If it be the kidneys, the more prominent symptoms are very similar to those where the spine is the seat of disease, except there is not the total loss of power.

If it be the bowels, the back is arched, the animal is drawn with intense pain and the abdomen is very tender; the bowels usually are at first costive, followed in the more advanced stages by frequent loose offensive discharges. In fatal cases the heaving of the flanks increases, a frothy matter runs from the mouth and nose, accompanied by vomiting and increasingly offensive discharges from the bowels, and death soon follows.

The duration of the disease is unlimited; the weather, surroundings, care and treatment all have their influence, and animals may recover in one or six weeks or may die in one day or in one month.

Treatment: The medicine for the earlier symptoms is belladonna, tinct., 10 drops three times a day in a little sweet milk, or, if the pig will not eat, the medicine may be mixed in a spoon with a little milk or water and put upon the tongue.

As the disease advances, if it attacks the brain, give belladonna or gelseminum.

If the throat, give belladonna or mercurius.

If the lungs, give aconite and phosphorus, alternately.

If the bowels, give aconite and arsenicum, alternately.

If the spine, give belladonna and nux vomica or belladonna and rhus toxicodindron.

Always give the tinctures and give at regular intervals; ten drops is a full dose for a hog. Where two medicines are to be given, give alternately; keep lime scattered in the pens and pastures; be as quiet

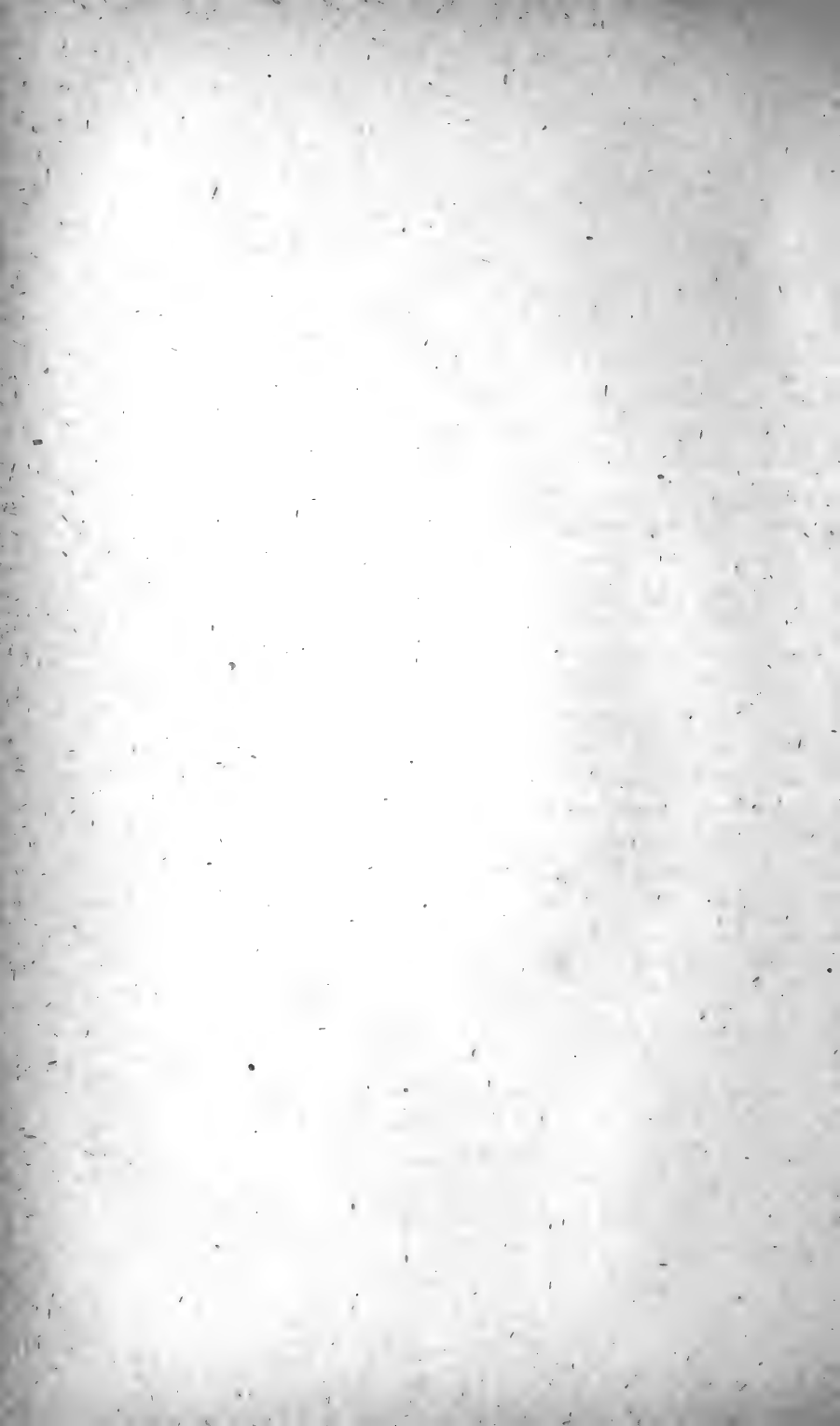
and gentle as possible with a sick animal, as violence or fright increases the violence of the disease. The only food should be sweet milk and bran mash; where the bowels are very constipated, give enemas of raw linseed oil or sweet oil.

The proper time to treat hog cholera is as soon as an animal shows the first symptoms of the disease, and, better still, as soon as it is known that the disease is in the neighborhood, for the old proverb, "An ounce of prevention is worth more than a pound of cure," is applicable in this disease. For preventive treatment, lime well and give of aconite and belladonna, tincture, equal quantities mixed, once a day, five drops to each pig, and carbolic acid once a day, two drops to each pig, in their drink.



REPORT OF THE STATE BOARD OF HEALTH AS
TO CONTAGIOUS DISEASES OF ANIMALS.

BY DR. E. M. HUNT, SECRETARY.



CONTAGIOUS DISEASES OF ANIMALS.

BY E. M. HUNT, SECRETARY STATE BOARD OF HEALTH.

At the close of our report, in January last, in addition to our State oversight, an investigation was being made in this State as to pleuro-pneumonia, under the direction of the Bureau of Animal Industry. A bill passed by Congress had provided for such inquiry, but made no provision for disposing of animals found to be affected with contagious pleuro-pneumonia. While we recognized the valuable assistance given in searching for localities of the disease, there was, at first, some increase in the number of affected herds reported to us; these, however, were entirely in sections known to be affected. Some herds, the owners of which frequently changed, as well as the cattle, required special attention. The reports made to us each month, or oftener in acute cases, showed that the disease was mostly found in Hudson and Bergen counties. Examination showed how well it had been eradicated in Essex and Union counties. Many of the cases found in Hudson county were chronic in their character. All acute cases were ordered killed, and the herds kept in quarantine for a proper time. Through January, February, March and April, the counties of Hudson, Bergen, Union and Camden were fully examined. Two herds which were badly affected in Hudson and Bergen counties, and one herd in Camden, required frequent examination or inquiry. The Camden herd was inoculated, but the others were found too much infected.

At the meeting of the Board of Agriculture, the Secretary of the Board again stated, that while the disease was held very much in check, it would never be eradicated by present methods. If all cattle from other States could be kept out, we should soon be rid of it; but so long as the stock yards of Pennsylvania and New York furnish us stock, without let or hindrance, so long as there is no registra-

tion or inspection of city dairies there will be outbreaks. Dairies in cities and their close vicinity keep up the disease. Cows kept in close quarters are especially liable to it; from these it spreads to better-kept herds.

We presented to members of the Legislature the propriety of a registration in cities and a small charge for the keeping of animals, in order to pay for skilled inspection. Until this is secured the action of the law will be incomplete.

In the early winter and spring months there was less of the swine disease than in the fall, but still enough to show that the virus was not killed by cold or frost. Cases occurred in Cape May county at the time of a deep snow. An outbreak, which killed several hundred hogs, at the Rio Grande Sugar Works, began in cold weather from an infected animal. The Board has been kept fully informed as to all recent investigations and opinions in the management of the disease.

Up to date of May 1st, we find no new views of management or treatment in advance of those contained in Circular XLVIII. of this Board. It was printed both in the Report of the Board of Agriculture, and the State Board of Health, and also widely distributed in separate form through the State. Those who follow its exact methods generally either avoid or limit the disease. In the spring, cases had occurred in Cape May, Burlington and Middlesex counties, and it still had a center in Warren county. It was not considered the duty of the Board to send veterinarians to investigate each case, as we are able by other methods to acquaint farmers with all the facts as to it.

Glanders, fortunately, has ceased in the car stables at Newark. Some cases have occurred at Trenton, and occasional sporadic cases are reported to the Board. The law of the State has put owners on watch as to it, and has resulted in good.

Tuberculosis is found to exist among cattle to a much greater degree than had been supposed. It is so much a menace to the milk and food interests of the State as to deserve the most careful inquiry.

In April, some cases of disease among sheep were reported by Dr. Rogers, of Westville.

Early in May, the Secretary of the Board presented to the Bureau of Animal Industry, at Washington, all the facts as to contagious diseases in this State, drawing attention especially to the swine plague. We found it still to be under the most careful investigation, and were assured that any new facts as to it would be promptly communicated.

During the month, two serious centers for contagious pleuro-pneumonia were found—the one in Burlington, the other in Camden counties. In both cases they were the result of cows purchased at the stock yards of Philadelphia.

The cases in Burlington county could be traced probably to a chronic case—a cow purchased in Philadelphia, who imparted the disease to cattle in this herd. The form of disease was here mild, and in marked contrast with the severe acuteness of the Camden cases. May 30th, two cattle were killed in each herd. We find the farmers ready to co-operate in all efforts to check the spread of the disease.

In June, reports were made of an additional outbreak in Burlington county, and prompt measures were resorted to to prevent any spread of the disease. The farmers in this county have come to realize the importance of prompt measures, and local boards are ready to co-operate without that delay which formerly occurred.

We found it necessary, on suspicion, to place in quarantine the herd of a cattle dealer who has been so unfortunate as to be the chief medium of introducing contagious pleuro-pneumonia into Burlington county, from the stock yards in Philadelphia, as he claims.

Some cases reported to us from Union county proved to be tuberculosis, a disease which is too rapidly spreading among the dairies in parts of this State. We have no law for the inspection of cattle-pens and stables in cities. So long as this is the case, they will continue to be the breeding places of disease. About the middle of July we were able to release all but about five herds in the State from quarantine.

We have recently received from Wyoming Territory a message from its Governor announcing that pleuro-pneumonia is epidemic in seventeen counties of this State. This intelligence is derived entirely independent of the Bureau of Animal Industry at Washington, which has made active and diligent search in this State, and also independent of the Board in this State which has oversight of the contagious diseases of animals. His Excellency has evidently been misled by some one who has more activity than insight or who thus is able to increase that fear of Eastern plagues which is felt by the owners of ranches.

In August there were several reports of contagious pleuro-pneumonia which required investigation.

Only one of these proved to be the disease. This was in one of

the best herds of the State, in a part of Somerset county bordering on Hunterdon. Four cattle had died. It was found necessary to kill several cattle in three different herds and to inoculate the rest.

Some chronic cases were found, but it has been impossible to trace the contagion with the usual directness, although some facts point to contagion from chronic cases in the same section.

Occasional cases of glanders continued to occur. Owners, however, are generally prompt in carrying out the law so soon as they are satisfied as to the disease and made acquainted with their duty.

In September a few more cases were reported in Hunterdon county.

The herds affected with pleuro-pneumonia were carefully guarded and many successful inoculations made. Other cases of glanders were traced to a drove of horses brought from Canada.

In parts of Salem county the outbreak of pneumo-enteritis (swine plague) was severe and the farmers had large losses.

More cases were also reported from Gloucester county, which were traceable to Salem county. Dr. Rogers says he is satisfied that isolation and carbolic disinfection do much to limit the disease.

The last of September and early in October, there were new outbreaks of pleuro-pneumonia in Burlington county, and two herds were reported in Camden county.

The stock yards in Philadelphia seem to be the chief distributors of contagion. Two or three herds recently affected are traceable to the same chronic source.

Late in October, another herd in Burlington county was traced to the same source. At date of November 1st, five herds in all remained in quarantine. Some cases examined near Mt. Holly proved to be tuberculosis, a disease which seems much on the increase.

The hog cholera is prevalent still in a few of the counties.

In November, the herds in Burlington and Hunterdon counties were the chief ones requiring attention, but the disease has not spread from those first implicated.

The inoculation of the Vincentown herd was successful in limiting one of the most malignant outbreaks with which we have had to deal. With all the misstatements and misunderstandings as to pleuro-pneumonia, it is our pleasure to find that where farmers are at pains to apprise themselves as to the disease and the State law in regard to it we have their full co-operation. Our only complaints come from those

who have been found in disobedience of the law, which, although often unintentional, has caused them much loss and put them in a complaining frame of mind. But it is our own experience and the testimony of the veterinarians of the Board, that all well-informed stock raisers and dairymen have come to realize how important is the protection which it affords them.

In December, as usual in the winter season, there was some decrease in contagious diseases of animals.

At the end of the year all herds in quarantine, but three, had been released.

Hog cholera has extended into Bergen and Morris counties and caused considerable loss. No remedy for it is known but isolation, and the close following of directions given in the circular of the Board aids farmers in limiting and preventing the disease.

In January, 1886, and at the close of the report, we have five herds of pleuro-pneumonia in quarantine. One of these in the neighborhood of Salem is of recent outbreak. The others are fully under control, and this one, it is believed, soon will be. We frequently get entirely rid of the disease for months in one entire county, but have it re-introduced from adjacent States.

In our experience with this disease, now extending over six years, we have never had a case in which it has spread to an adjacent herd after we had instituted quarantine. We now depend much on inoculation as a means of saving the particular herd attacked. If, as to this and the other contagious animal diseases, the farmers would accurately follow the circulars of the Board it would greatly aid in the control of these diseases.

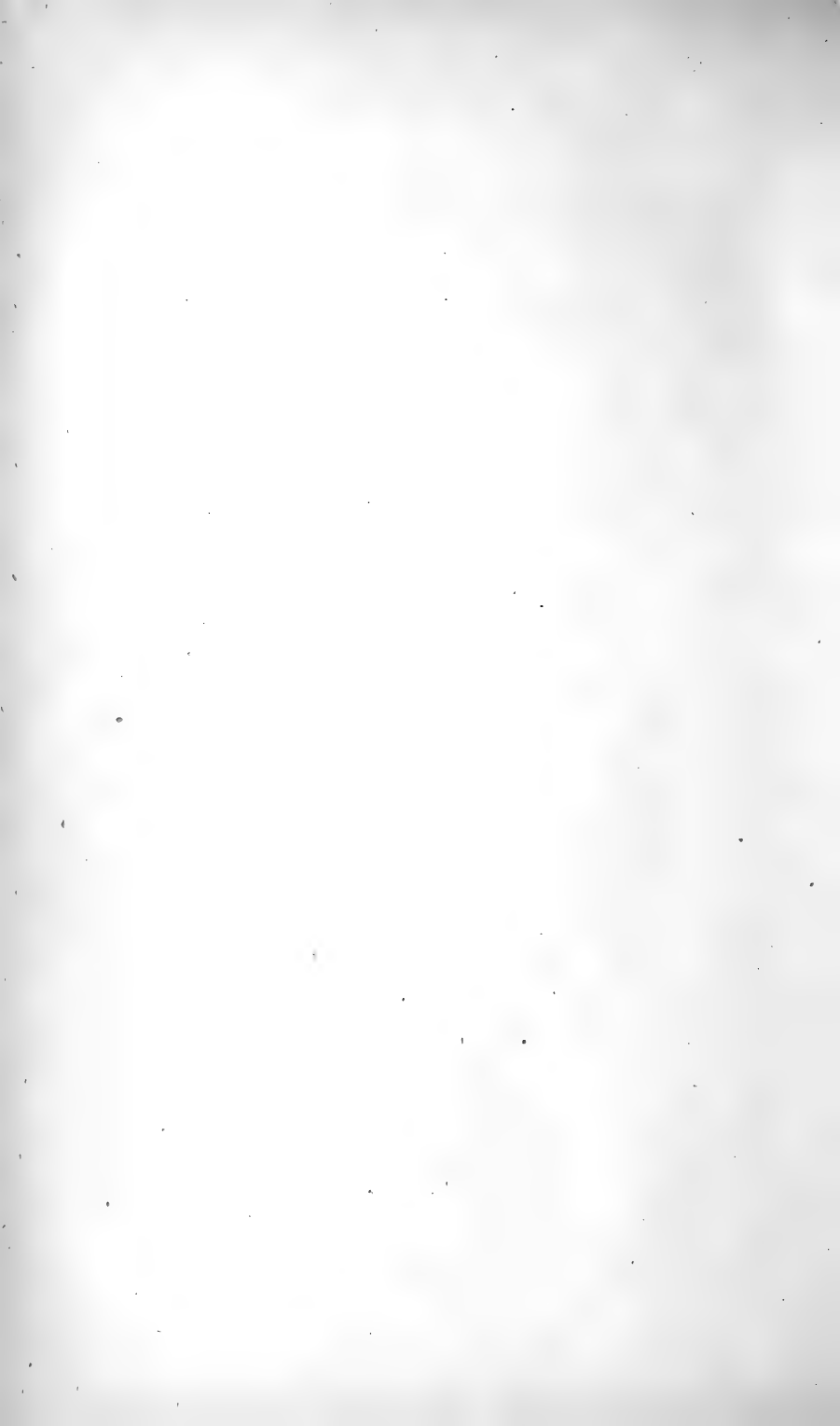
Tuberculosis is on the increase in the State, and needs the careful attention of stock-men. It is all the more serious, because tuberculous cows continue to give milk, which is not fit for food.

Glanders has not prevailed in any one locality to the degree that it did in Newark; but it shows itself here and there through the State, and requires vigilance. The special bill as to it has been effective. As the bill did not make any special appropriation, the expenses come out of the provision made in the bill as to the contagious diseases of animals. It is a great pleasure to know that the important, and at times arduous, work which has devolved upon the State Board of Health in dealing with these diseases, and the perplexing complications which sometime arise, have come to be appreciated by most of the

farmers, and that we now so generally have their intelligent and cordial co-operation.

We append to this report valuable outlines and papers from several of the veterinarians, who, with ability and earnestness, have aided in the work, and to whom the thanks of the farmers of the State are due.

REPORTS OF STATE VETERINARY INSPECTORS.



REPORTS OF STATE VETERINARY INSPECTORS.

REPORT OF W. B. E. MILLER, D.V.S.

CAMDEN, NEW JERSEY, January 26th, 1886.

To the Secretary State Board of Health of N. J. :

SIR—In accordance with your request, I herewith submit a report of the contagious diseases of animals that have come under my observation and inspection from January 1st, 1885, to date.

January 2d, 1885, visited the farm of Samuel H. Rhoades, of Mount Ephraim, Camden county, and examined his herd of forty-five cattle. Found two sick with contagious pleuro-pneumonia, one of them very bad. Was informed by the attendant that one animal had already died. The herd was quarantined and revisited on January 13th, when another animal was found dead and the other appraised and slaughtered, post-mortem examinations being made of the carcasses of both, which revealed the disease in its worst form. On January 17th, accompanied by Dr. Dyer, revisited the farm and inoculated the healthy animals, thirty-eight in all, and isolated such as were sick or suspicious. From that time forward, for the following three or four months, regular visitations were made to the farm and a general supervision kept over the herd. There being no further evidence of any disease existing, the herd was released from quarantine and other animals were purchased and taken to the farm, which, on account of the great difficulty of procuring the proper kind of virus, were not inoculated at the time, nor have any been inoculated since, although several have since been purchased.

From the time of the purchase of the animals not inoculated, until the beginning of the year 1886, the cattle have been in excellent health, so far as the owner is able to discover. On January 20th, 1886, I was again called to the farm and found three sick cows—two of them, lung lesions; the third affected with disease of the urinary apparatus, due to parturition; she was one of the animals that had

been inoculated, the two first mentioned were not. One of these cows, in consequence of her serious illness, prematurely gave birth to a calf, which, added to her other afflictions, hastened her death, which occurred on the 23d inst. I made a post-mortem the day following, and found characteristic lesions of contagious pleuro-pneumonia more marked in the pleura than in the lung tissue. The other animal was apparently better than when seen a few days before, she seemingly being affected with a milder form of the disease. The efficacy of inoculation, as a preventive measure, has been clearly demonstrated in this herd, and I shall at once inoculate the balance of the healthy animals.

On May 20th, 1885, I discovered an outbreak of contagious pleuro-pneumonia in the herd of Michael Feenfer, of Pavonia, Camden county. The herd was quarantined and the healthy animals inoculated. Of the sick several died, and others were slaughtered as ordered by you. The herd was regularly visited and a careful watch kept over it for several months, when it was released from quarantine and has since had other animals placed therein, all of which have until the present time been in perfect health.

I made several visitations to Burlington county in company with Dr. Dyer and examined animals affected with contagious pleuro-pneumonia on the farms of Levi Jones, near Pemberton, Samuel J. Branning, near Medford, and Shreeve Robbins, of Vincentown, all of which will be duly reported to you by Dr. Dyer, who has had charge of the cases on the several farms in that locality.

On January 25th, 1886, I visited the herd of John Dawson, four miles from Salem, Salem county, and examined his herd, and found three animals very sick with pleuro-pneumonia and a fourth suspicious. The sick were isolated from the balance of the herd and every precaution taken to prevent the spread of the disease. The healthy stock will be at once inoculated and the sick slaughtered as the best means of eradicating the disease quickly and effectively. There are other herds in the vicinity that might be exposed, if radical means were not employed to wipe it out at once.

There have been several cases of glanders in horses and mules that have come under my examination in the city of Camden, together with a few isolated cases in the country, all of which were promptly destroyed. I was also called to see one case near Avis' Mills, in Gloucester county, the animal—a mule—having the disease in its very

worst form and rapidly approaching a fatal termination. I at once ordered the destruction of the animal, which was done in my presence, and the burial of the carcass as well.

Swine plague has been very prevalent in some sections of Camden, Gloucester and Salem counties. Especially is this the case in portions of Salem, many farmers having lost almost their entire herd of hogs. The disease in that locality was remarkably fatal in its character, old and young alike falling victims to its ravages.

REPORT OF WM. HERBERT LOWE, D.V.S., PATERSON, N. J.

Herewith I respectfully submit my report of such services as I have rendered the State Board of Health for the year ending December 31st, 1885.

Pleuro-Pneumonia.—During the year I have received several notifications of the existence of pleuro-pneumonia in different parts of Passaic, Bergen, Essex and Morris counties; but in all such cases, though I generally found lung complications, they were invariably other than those of pleuro-pneumonia contagiosa. That misconceptions should be entertained is not remarkable when it is remembered that broncho-pneumonia and tuberculosis (in certain stages) so often simulate contagious pleuro-pneumonia. It is my opinion that not one case of contagious pleuro-pneumonia at present exists in Passaic county.

Owing to the inadequate restrictions regarding the transportation of cattle from infected to non-infected counties, it is a question of time only till it does appear. Instead of waiting for the disease to invade large and, perhaps, valuable herds of cattle, means of prevention, in all possible ways, should be adopted and strict laws, fully and wisely enforced, should aid inspectors in making clean bills of health. Then, and then alone, can such results be reached as will crown the labors of the veterinarian as a sanitarian.

February 26th I visited a farm in Pequannock, where I found a chronic and suspicious case; history unsatisfactory; time, however, proved that the case was sporadic.

The owner of a large herd of milch cows in Preakness reported to

me, March 17th, that there was sickness among his cattle, and he feared that it was contagious. I visited his farm, but found only one cow sick, though two had died. There was no contagion. I was employed to treat the sick cow; she was suffering from congestion of the lungs, which soon yielded to treatment.

A petition signed by several citizens of New Bridge, near Hackensack, in Bergen county, was addressed, July 6th, to the health authorities, stating that

“WHEREAS, A contagious and fatal disease has attacked the milch cows of one of our neighbors, we deem it our bounden duty to submit the matter to your honorable body for prompt action, for the benefit of human health and the safety of the cattle of his neighbors.”

By order of Dr. Hunt, Secretary of the State Board of Health, I at once visited New Bridge. Dr. Wm. K. Newton, Health Inspector of the city of Paterson, and State Milk Inspector, accompanied me. At the time of our visit, though several cows had died, I found only one sick cow. She was suffering from sporadic pleuro-pneumonia. After having examined the sick cow and considered the history of each case of the so-called outbreak of “contagious and fatal” disease, I was satisfied that though there was fatality, the death of the animals was owing to causes independent of contagion. On a subsequent visit I found that the sick cow had recovered, and that the rest of the herd were in good health. All went to show that it would have been better for the interested parties to have employed a competent veterinary surgeon.

Tuberculosis.—Early in January a tuberculous cow was slaughtered in Paterson. She had been bought by a Paterson butcher from Martin Kane, of Caldwell, Essex county. January 14th, by order of Dr. Hunt, I visited Caldwell and examined the herd of Mr. Kane. At the time of my examination tuberculosis was not developed in any of his animals.

February 24th I found a tuberculous cow on the farm of George S. Kent, in Fairfield, Essex county.

March 11th I visited the farm of Henry C. Post, a milkman of Preakness. On examination I found one cow suffering from tuberculosis, which was immediately destroyed. The autopsy showed a development of the disease in one of its worst forms. The lesions being well marked, I sent portions of the lung and liver tissue to the

American Veterinary College, New York City, as fresh material useful for the students in pathology.

July 19th I visited the place of Andrew Harris, at Upper Montclair, and made post-mortem examination of a cow. Autopsy showed that the cow had suffered from tuberculosis.

Bovine tuberculosis is not rare, and this any local veterinary practitioner of experience in my part of the State well knows. There is one aspect of the subject which, I think, ought to receive more consideration than is generally given it. Pleuro-pneumonia principally involves a question of property and its money value, but tuberculosis, that is if it be communicable to the human subject through the milk and meat of tuberculous animals, as many eminent scientists now claim, has a signification of vast and wide-spread importance. As the law now stands, there is no authority by which tuberculous animals can be destroyed, and yet, considering the prevalence of the disease and its devastation, it is a question whether any of the other contagious diseases are worthy of more attention or stricter legislation than tuberculosis. This and other aspects of the subject have been frequently brought to public attention during the past year by the Paterson papers. The *Press* has frequently been painstaking in publishing such articles and announcements on sanitary subjects, as give clear and rational views to the owners of animals as well as to the public generally, thus aiding me very materially in the performance of my duties; for, with slight exceptions, I have been cordially received by persons who, no doubt, under less favorable circumstances would not have been slow to take exception to my investigations and, perhaps, have thrown serious barriers in my way. I have invariably tried to show stock owners, and not without considerable success, that we were their best friends both in the discovery of contagious diseases and the carrying out of such preventive measures as the accumulated experience of the veterinary profession has demonstrated to be essential.

Though there are certain organic conditions which cannot be discovered in the laboratory, and manifest themselves to the clinician only, yet it would be difficult to overestimate the value to the people of this State, of the number of analyses and microscopic examinations made by the State Milk Inspector.

Lead Poisoning.—On being notified, June 9th, by the Paterson Board of Health of a supposed contagious disease among the cows of

Passaic City, I immediately made investigations. The cows of quite a number of citizens, though stabled by their owners in different parts of the town, were pastured in one field, and many were the opinions, both in print and out of it, concerning the nature of the disease. Anxiety, and in some cases alarm, arose and pervaded the community lest the milk should be unfit for use. Apparently the field in which the cattle pastured could not be other than conducive to their comfort and welfare. It was supplied with a spring of excellent water, which an interested physician analyzed, many people supposing that the water was the cause of the sickness and death of such animals as died. Several practitioners, regular and irregular, had been called upon for their opinions. The disease was variously pronounced as meningitis, enteritis, brain fever, wolf in the tail, hollow horn, and so forth; but the mystery still remained unsolved. Each day the papers of Passaic and Paterson published full, if not true, accounts of such said mystery. One of the irregular practitioners who was consulted on the first appearance of the disease, not being able to fully define it to his own satisfaction or that of his patrons, had many wonderful theories. With a look of great gravity he said confidentially, "I tell you, doctor, there's no doubt that it is the plural-phenomena."

The result of my examination was that lead-poisoning or plumbism caused the sickness and mortality among the cows in Passaic. The correctness of the diagnosis was verified by the finding of pellets of white lead in the stomachs of several of the dead cows. At two of the autopsies I was assisted by Dr. A. M. Farrington, Veterinary Surgeon of the United States Cattle Quarantine at Garfield. The finding of lead caused further inquiry. My Hibernian assistant made a thorough examination of the pasture, where he found quite a number of paint pots and paint brushes, which probably reached there from some new buildings in the immediate vicinity of the pasture grounds. A fuller account of these cases was given in the *American Veterinary Review*, published by Dr. Liautard, of New York.

Hog Cholera.—February 21st I visited the farm of Harvey Hosier, at Pequannock, and found hog cholera there.

In March, Abram G. Hopper, of Ridgewood, Bergen county, lost over one hundred valuable Berkshire hogs. During March and April hog cholera appeared on several farms in Mr. Hopper's neighborhood, and the loss was large.

June 8th, visited Paramus and found that hog cholera existed on several farms.

November 14th, visited Garfield, Bergen county, where the disease had broken out.

November 20th, visited Fairfield, Essex county, and found the disease.

I have found the disease on many farms too numerous to particularize. In November the disease became very prevalent in Passaic, Bergen, Essex and Morris counties.

Actinomycosis.—February 18th I was called to see a very interesting case. A cow owned by R. G. Ryerson, of Mountain View, was prostrate and in a very emaciated condition. I think I never saw a cow living having so deathly an appearance. There was a very great enlargement of the inferior maxillary region. In looking earnestly at the conditions while hearing the history of the case, I was forcibly impressed with the idea that I had a veritable case of actinomycosis, described by Fleming as "a new infectious disease of animals and mankind." The owner agreed with me that the cow had better be destroyed. I held a post-mortem at once and sent the inferior maxillary region, tongue, heart, liver, kidneys, etc., to the New York Post-Graduate Medical College. Some time afterwards Prof. Thomas E. Satterthwaite, of that institution, informed me that the case was doubtless actinomycosis, that one of his assistants was much interested in the subject and had made a very careful examination of the organs which verified the diagnosis.

Rabies.—It is not now necessary to dwell upon the subject of hydrophobia or, more properly, rabies. The ravages of rabies within the last few months have been so dreadful as to cause general alarm. If the greatly increased spread of the disease fails to put people on their guard, it would be worse than useless to try to impress anything upon them which might possibly appear in print. More than a year ago my attention was awakened to the subject by the number of rabid dogs of which I had authentic information, and by several cases which I was called upon to see in the earlier stages of the disease. I briefly mentioned these facts to Mr. P. T. Quinn, Secretary of the State Board of Agriculture, which led to the preparation of a paper, entitled "Canine Madness in Our Midst," which appeared in

the last report. Through my instrumentality a large number of dogs known to have been bitten by those that were rabid, and a large number of suspected ones, were destroyed in Passaic and Essex counties. In quite a number of instances, valuable but suspected dogs were secured beyond the possibility of doing injury until a sufficient time had elapsed to settle the question of the existence or non-existence of the disease. I spared no means at my command to put people on their guard, knowing that one need not be much of a prophet to predict consequences; and while some people supposed that I might be urging unnecessary precaution, time has shown that, if the paper in question was not useful in other respects, it gave at least timely warning. I said then: "Officials ought to have great discretionary power in dealing with suspected animals." Recent developments, I think, have settled the fact that there ought to be such special legislation as would enable veterinary inspectors to deal summarily with all real and suspected cases of rabies. Whatever the result of Pasteur's experiments, few will deny the importance of prevention. I do not hesitate to say that if proper warning had been taken respecting the cases I reported last year, fewer people would now have occasion to mourn the loss of their friends.

REPORT OF DR. A. S. LEATHERMAN, CLINTON, HUNTERDON COUNTY,
NEW JERSEY.

To the State Board of Health:

GENTLEMEN.—I have been asked for a statement or report of cases of contagious diseases, by Dr. E. M. Hunt, Secretary.

August 21st, 1885, I visited Wm. H. McIlhanney's farm, near Woodfern; found his herd of cattle afflicted with pleuro-pneumonia, said disease having existed for nearly two months, during which time they were attended by a veterinarian, but all attempts at cure proved a failure, and a serious one, too. We killed six cows; inoculated twenty-two head.

Mr. McIlhanney's losses, as reported by his dairymen, were, I think, six cows previous to my visits. Several chronic cases that did not take on flesh, were afterward killed and properly buried. Mr. McIlhanney's herd at present writing is doing well.

Recently he has added or purchased twenty-two head of dairy cows, which I immediately inoculated.

Dr. E. M. Hunt on several occasions accompanied me in visiting McIlhanney's herd, giving me some very valuable instructions. We found there was trouble ahead, as Mr. McIlhanney had sold six head of cattle awhile before; G. C. Higgins & Brothers, near Three Bridges, Somerset county, were the purchasers; they resold to David Dills, three cows, near Centerville. These cattle were purchased in July, 1885. Also to Isaac Hann one cow, and one cow to David Lowe, Wertsville; the remaining two, G. C. Higgins & Brothers retained. The result was an outbreak of pleuro-pneumonia in G. C. Higgins & Brothers' dairy, near Three Bridges.

September 12th, 1885, I visited G. C. Higgins & Brothers' farm. They reported one cow had died, and two well-developed cases of pleuro-pneumonia I ordered killed. I inoculated the balance of twelve head.

September 26th. Visited G. C. Higgins & Bros.' dairy; found one cow having pleuro-pneumonia; ordered killed; balance all doing well. I frequently visited the affected herds, as also those which had been quarantined on account of serious exposure.

I do not think any blame should be attached to Mr. McIlhanney or G. C. Higgins & Brothers at the time of selling. Neither party had any knowledge of the character of the disease.

Mr. W. H. McIlhanney had borrowed a bull from John N. Yawger while his cows were affected; from Mr. McIlhanney he was taken to John B. Hough's, and then returned to his owner, John N. Yawger, where he was kept separate, and developed pleuro-pneumonia, nearly three months from date of exposure. The result was this outbreak. I am a strong advocate of inoculation; but, in my opinion, only in infected herds should it be resorted to. All exposed herds were quarantined as well as the affected ones. At the request of the Secretary I visited and carefully examined, in order to avoid its spread and shorten its existence, both the exposed and affected herds.

August 21st, 1885. Quarantined A. K. Smith's stable, Clinton borough, same having a horse glandered. Ordered horse killed, disinfecting and cleansing of stables, new mangers, &c.

Horse purchased from Jacob Johnson, Flemington, N. J., some time about three months previous. Mr. Johnson having shipped horses from Canada.

August 9th, 1885. Quarantined stable of Peter A. Dailey, Round

Valley, Hunterdon county, Mr. Dailey having a glandered horse. Ordered killed. The horse was also traced to Mr. Johnson's car load shipped from Canada; Dailey having purchased the animal from Johnson. Mr. Dailey has one remaining horse.

September 27th. Visited Jacob Kentner's stable, examined five horses and found four of the animals glandered. Quarantined and ordered killed.

September 29th, 1885. I visited Mr. Kentner's horses again; Prof. Liantard, at the request of Messrs. Kentner and Johnson, met me and examined the horses. His decision proved the same as mine.

October 1st. I killed the four diseased horses, by Mr Kentner's consent, leaving one brown mare, which to all appearances is sound and all right.

In all three instances the diseased animals were traced to the car load of horses shipped from Canada.

December 23d, 1875. I visited John J. Hall's herd near Clover Hill, Somerset county. Quarantined same. Found after examination one cow afflicted with pleuro-pneumonia, but in my opinion not sufficiently developed to produce virus. I again visited the herd, December 25th; ordered cow killed, and inoculated nine head.

I have frequently visited since; inoculations all seemed to have taken nicely. At present writing his cattle are doing well.

I will say Mr. Hall pastured next to Messrs. G. C. Higgins & Brothers, on the meadows where Higgins' herd was.

December 21st, 1885. I visited J. W. Berkaw's stable to examine a horse suspected of glanders, the same having catarrh trouble.

January 8th, 1886. I visited Mr. Hogland's herd, supposed to have pleuro-pneumonia, but found no symptoms of the disease.

During the year 1885, I visited a herd in Warren county, reported as Texas fever, but failed to find any traces. I have not seen any Texas fever since 1883.

REPORT OF I. W. HAWK, D.V.S., AND H. W. ROWLAND, D.V.S.

January 1st, 1886.

To the State Board of Health:

In accordance with our duties as veterinary inspectors for the State of New Jersey, we have the honor to submit the following report of the work done by us from November, 1884, until the present date:

November 5th. We visited Seacaucus, in Hudson county, and found pleuro-pneumonia to exist in George Harmes' herd of cattle; also, Frank Keller's, S. Koskowsky's and A. Gutjahr. We put these herds under quarantine and reported them to the State Board of Health.

December 9th. We found pleuro-pneumonia in a herd of cattle near New Durham, in Hudson county.

December 16th. We killed a cow affected with pleuro-pneumonia that belonged to George Harmes; and, also, for Frank Keller, one; S. Koskowsky, one; F. E. Eulitz, one, and A. Gutjahr, one.

December 17th. We found a case of pleuro-pneumonia in Essex county, Newark.

December 18th. We killed one cow affected with pleuro-pneumonia, belonging to F. E. Eulitz, on this date.

December 22d. The case at Newark, we killed on this date, and put the rest in quarantine.

December 29th. We found a case at Marion, Hudson county, also another near Englewood, Passaic county. See date December 31st.

December 30th. We found a herd affected with contagious pleuro-pneumonia at Guttenberg, Hudson county. We at once placed said herd under quarantine and reported it to the State Board.

December 31st. We killed three cows that were affected with pleuro-pneumonia, for John Culla, near Marion, Hudson county.

January 7th, 1885. We killed another cow for a party near the above mentioned.

January 17th. We found at Marion on this date, one cow that had just died but a short time before and another very sick. The same date we killed three cows afflicted with pleuro-pneumonia at Guttenburg, Hudson county.

February 2d. We killed four cows at Guttenburg, Hudson county.

March 20th. We killed two cows at Guttenburg, Hudson county, that were affected with pleuro-pneumonia.

April 3d. We found pleuro-pneumonia near Hoboken; one cow had it very bad and soon died. We then put herd under quarantine and reported it to the State Board of Health.

September 24th. We found one case of pleuro-pneumonia in a herd of cattle at Higgen's Mills, Hunterdon county.

November 10th. We found upon this date a chronic case of pleuro-

pneumonia in Somerset county, near Bound Brook. We soon had the animal placed by itself and the next day killed her.

November 23d. We found upon this date a cow suffering along the road, near Bound Brook, in Somerset county, and we examined the animal and found it to have tuberculosis.

December 15th. We also found a case of tuberculosis at Linden, Union county.

December 19th. We visited Morristown, in Morris county, and we found parties that were complaining of hog cholera amongst their swine. One party had but a short time before lost one hundred and seventy head, and there were some dead that we saw while there, and also others very near dead.

We also visited Warren county and found parties complaining about the loss of so many of their swine from this dreaded disease.

REPORT OF W. P. SMITH, D.V.S.

TRENTON, N. J., February 1st, 1886.

To the State Board of Health:

GENTLEMEN—Having heard that glanders existed in stables belonging to Mr. James Murphy, October 1st, by request of Dr. E. M. Hunt, visited said stables; found that one horse had died, another had symptoms of the disease; had it isolated, and on October 17th, in company with Dr. Dyer, horse was condemned and destroyed.

January 6th, 1885. Visited same stables and found another horse suffering from same disease; had it isolated also to await full developments, and on the 17th of February, in company with Prof. Gadsden, of Philadelphia, it was condemned and destroyed.

March 7th. Visited same stables and found another horse suffering from pneumonia; it died on the 8th, after having been sick some time previous; post-mortem in all cases revealed glanders and farcy in different stages; the stables having been cleansed and fumigated it has had the desired effect of stamping out the disease in that locality.

July 3d. Visited stables belonging to the Delaware Coal and Ice Company; found horse sufficiently developed with farcy and glanders to warrant being destroyed, which was done on the 8th, and stable

cleansed and fumigated ; there has been no further trouble since from that source.

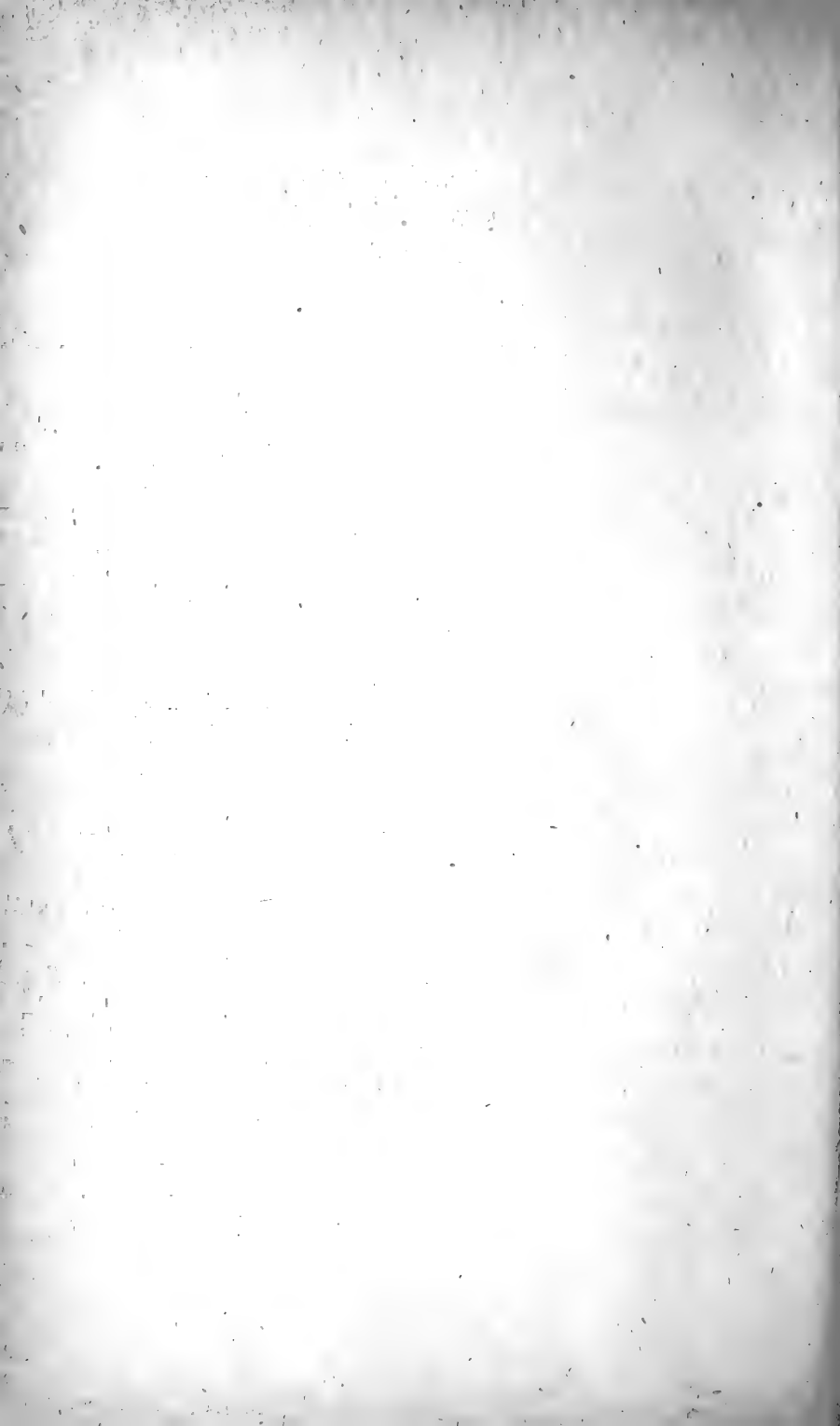
November 5th. Visited a cow in Spring street, supposed to be affected with pleuro-pneumonia ; cow died while I was there ; post-mortem showed tuberculosis.

November 6th. Visited cow belonging to Mr. Phillips, in Ewing ; he had lost two some time previous ; succeeded in getting him to kill her ; post-mortem showed tuberculosis extending throughout internal organs.

January 19th, 1886. Visited cow in Bond street, in the advanced stage of tuberculosis, which was destroyed by consent of the owner.

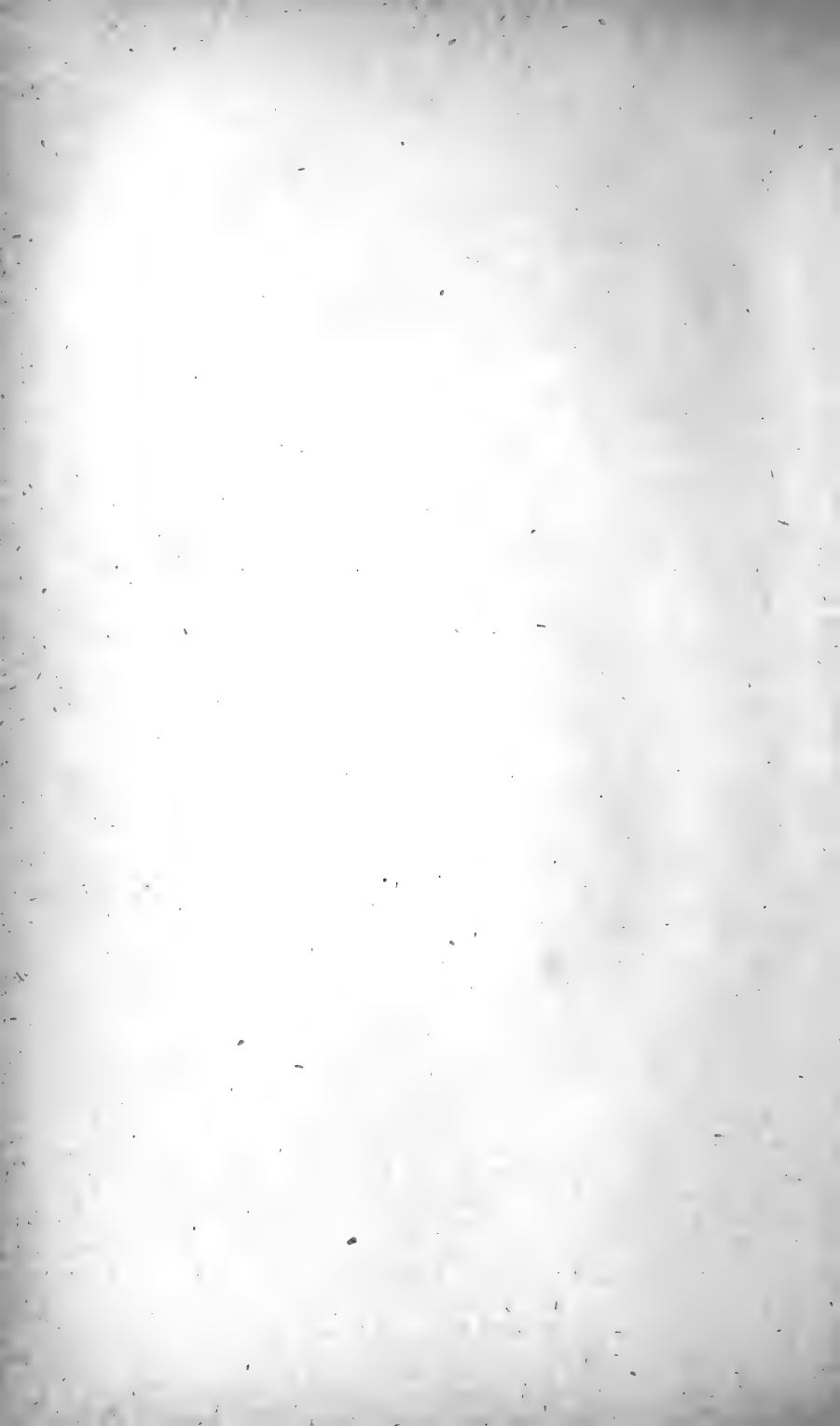
January 20th. By order of Dr. E. M. Hunt, visited farm of Alex. Grey, Aqueduct Mills, near Princeton ; he had lost two cows, and has two more sick ; post-mortem in the case of the one that had died revealed tuberculosis ; the other two were isolated.

I think this disease is gaining ground rapidly, and that there should be something done to prevent its progress throughout the country. While the State Board of Health have issued circulars on the subject of contagious and infectious diseases, every farmer should be supplied with the knowledge to care for animals when sick, so as not to spread any contagion or infection to other animals, and by so doing will aid in stamping out such diseases.



A HISTORY OF THE RED HOGS OF AMERICA.

BY COL. F. D. CURTIS.



A HISTORY OF THE RED HOGS OF AMERICA.

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The written history of the Red Hogs of America does not extend beyond the meeting of the First National Swine Breeders' Convention held at Indianapolis, Ind., November 20th, 1872. At this convention both the Jersey Reds, of New Jersey, and the Durocs, of New York, were described as two families of red swine of similar characteristics; the Duroc "finer in the bone and carcass than the other reds." The following is the full report of the Committee on Jersey Reds, which was submitted to the convention, and adopted by it as authority, November 20th, 1872, at Indianapolis, Ind.

JERSEY REDS.

Mr. Curtis, from the committee, submitted the following report on Jersey Red swine:

"The positive origin of this family of swine is unknown. They have been bred in portions of the State of New Jersey for upwards of fifty years, and with many farmers are considered to be a valuable variety. They are of large size, and capable of making a heavy growth, five hundred and six hundred pounds weight being common. Mr. David Petit, Salem, Salem county, N. J., has known of these hogs for thirty years, and Mr. D. M. Brown, of Windsor, for nearly fifty years. They are now extensively bred in the middle and southern portions of New Jersey. In neighborhoods they were bred quite uniform, being of a dark red color; while in other sections they are more sandy and often patched with white. They are probably descended from the old importations of Berkshires, as there is no record of the Samworth—the red hogs of England—ever having been brought to this country; nor is it likely, as the Samworth were not considered a valuable breed, and were confined to a limited breeding. The reds resemble the old Berkshires in many respects, but are much coarser than the improved swine of this breed.

“Characteristics.”—A good specimen of a Jersey Red should be red in color, with a snout of moderate length, large lop ears, small head in proportion to the size and length of the body. They should be long in the body, standing high and rangy on their legs. Bone coarse, hairy tail and brush, and hair coarse, inclining to bristle on the back. They are valuable on account of their size and strong constitution and capacity for growth. They are not subject to mange.

[Signed,] “F. D. CURTIS,
“*Chairman of Committee.*”

Neither Mr. David Petit, of Salem, N. J., nor Mr. D. M. Brown, of Windsor, N. J., could tell the origin of the red hogs of New Jersey, nor could they obtain any authentic information from any other source. The name Jersey Reds was undoubtedly given to these hogs by the late Joseph B. Lyman, about fifteen years ago. Mr. Lyman at that time resided in New Jersey, and was the agricultural editor of the *New York Tribune*. Previous to this period they had been called Red Hogs and Durocs, as this name had been given to the red hogs of New York many years before. Mr. Lippincott, of New Jersey, was the first man to advertise these hogs as Jersey Reds. For about a century these red hogs were crossed and recrossed with the different breeds of hogs in the State, and also bred back to red hogs. Some farmers would breed for all red, while others preferred red and white patched.

In Saratoga county, New York; in Connecticut and in Vermont, the same type of red hogs were bred, with about the same system of breeding, or rather without any system or standard. Within a few years breeders here and there began to breed to a type of their own, and to work in a thoroughbred line. In 1877, the breeders of Durocs in Saratoga and Washington counties, New York, met and agreed on a standard of characteristics, a report of which breeding, together with the standard adopted, was printed in the agricultural papers. This was the first associated standard pertaining to red hogs ever printed, and it is the same substantially as was afterwards adopted by this Association. In Connecticut, the family of red hogs resembling the Jersey Reds and Durocs were called Red Berkshire; and in Vermont, where there was a similar family, they were called Red Rocks. The breeders of the so-called Red Berkshire and Red Rocks have cordially united with us, and our standard has been universally accepted by the breeders of all the red hogs of America who are breeding in the line of thoroughbreds.

The late William M. Holmes did more than any other breeder of red hogs in America to improve and perfect them. For many years he gave a great deal of time and thought to this object, and visited every place where there was an old family of red hogs, and obtained their history, as far as possible, and compared their characteristics. His testimony, after the most careful and painstaking examination, was that the report of the Committee of the First National Swine Breeders' Convention, herein printed, was correct. Mr. Holmes was present at the meeting of the Duroc breeders in 1877, above mentioned, and wrote the standard of characteristics.

The Duroc family of red hogs were so called by Isaac Frink, a prominent farmer living in the town of Milton, Saratoga county, New York. The writer knew him, and once, when his guest, was invited out to see his hogs "up to their eyes in clover." They were in splendid order, and the owner, with becoming pride, said, pointing to them, "That is the way to make pork." In the spring of 1823, Mr. Frink took a mare to the noted stallion Duroc, then owned by Harry Kelsey, in the town of Florida, Montgomery county, New York, about twenty-five miles away. There he saw a litter of ten red pigs, the production of a pair of red pigs, bought the year before by Mr. Kelsey, either from Oyster Bay, Queens county, New York, or imported by him from England. He moved from Oyster Bay to Florida. In regard to the importation of the pigs the history is not authentic, although Mr. Kelsey told Mr. Frink that they were imported. It is not likely that a pair of pigs would be imported from across the ocean, and he undoubtedly used the term, as many do now, incorrectly, and simply meant brought from a distance. If they had come from a foreign country a name would undoubtedly have followed them, whereas Mr. Kelsey simply called them *red pigs*, and Mr. Frink found it necessary to give them a name, which he did, and called them Duroc in compliment to Mr. Kelsey's famous horse.

Mr. Frink purchased a boar pig and took it to his home in Saratoga county. The services of this Duroc boar were much sought after, as the crosses were found to be very growthy, and the pork of excellent quality. A great many of the pigs were red and resembled the boar, which was long and deep in the body, with lopped ears, and thick and heavy in the shoulders and hams. The offspring were noted for their quiet disposition, as well as rapid growth. The popularity of these crosses extended all over the country, and they were

sought after for breeding. When a boy, the writer remembers a sandy boar of this blood, owned by his father, which he esteemed highly.

Red hogs were sought for by others, and in 1830 William Ensign, of Wilbur's Basin, in the town of Stillwater, Saratoga county, N. Y., brought a pair of red hogs from Connecticut, and the next year he got a few more from the same place. He bred them and sold them far and near. Saratoga county was a lively "pork district" in those days, and a great interest was taken in the breeding of hogs. The Frink and Ensign families of red hogs were crossed and the breed established. They have been bred ever since with more or less care and effort at keeping them thoroughbred, but no fixed type or standard was followed (except an individual one) until the one adopted, to which allusion has been made.

Some breeders have crossed the red blood on the modern Berkshires so far as to establish a family of red hogs with upright ears; and others have crossed on the finer breeds of white hogs and made crosses of similar form with the Berkshire cross, mostly red, but with continual reversions to black and white markings.

Two importations of the Samworth, the red hogs now bred in England, have been made by Thomas Bennet, Rossville, Ill., who imported four sows and three boars, March 7th, 1882, and William M. Holmes & Sons, Grinnell, Iowa, who brought over a pair, May 1st, 1882. Mr. Bennet made some crosses of these imported hogs upon the American reds, but the Messrs. Holmes slaughtered theirs without breeding them, as they considered them too much unlike in characteristics, and not equal to animals of their own breeding. With the above exceptions there is no authentic account of any importations of red swine, from any country, at least for many years, except plum-colored in the modern Berkshires.

When Hon. Henry Clay, of Kentucky, was in active life, he imported from Spain four red shoats. This was in 1837. Mr. Clay was much pleased with these red hogs and bred them on his farm at Ashland for a number of years. They were probably the original blood from which the Southern-bred Kentucky family of red hogs are descended. Some of these red hogs may now be found in Kentucky, changed in characteristics by continued crossing with the local breeds, and generally modeled after them, but, like all families of red hogs, retaining with remarkable tenacity the red color. Specimens of

these red hogs which I have seen had upright ears. Mr. Clay, it is stated by Hon. John R. Woods, of Albermarle county, Virginia, in a recent letter, presented some of these red hogs to a friend in Virginia. Traces of this blood in that State are now, however, quite limited. The most extensive dissemination of red swine seems to have been through the early importations of Berkshires, in which sandy and red color were conspicuous. Mr. William M. Holmes, in his researches of this matter, was of the opinion that about fifty years ago there was a considerable number of hogs with the red cast disseminated from New York to the adjacent country. The reversion to red is not yet bred out of the modern Berkshires, through whose blood it may now be noticed as frequently as among registered Poland-Chinas, notwithstanding the direct crosses of black, which have been made on that breed, and the turning of the ear upward.

The Duroc-Jersey hog is the old-fashioned Berkshire, with the old-time qualities which made the breed so famous. All the crosses which have been made have not bred them out, for the old type seems to have been the standard all of these years, and to have been well understood by many breeders who kept breeding back to it. The breeders of the modern Berkshires have bred in a different direction, preferring greater compactness, finer bone and more fat. This line of breeding naturally reduces the proportion of lean meat and makes a more chubby pig.

The New Jersey breeders had a fancy for large hogs and some of them pushed their reds to the extreme of large size, which necessitated large bone and largeness of body. These, of course, were essential for enormous weight. Other breeders did not follow these extremes, and bred their hogs after a medium standard.

The Durocs in New York and the red hogs of Connecticut were formed after a medium standard, and no doubt those also of Vermont. At the first meeting of the present Duroc-Jersey Association the breeders of the different families agreed upon a common standard of characteristics to represent their breed. This standard is the type, as near as may be, of the old Berkshire. In uniting under one head, the breeders of Duroc-Jersey swine have followed the same course pursued by the breeders of different families of the Poland-China hogs, and with one common standard and one common object, in one association, to endeavor to improve and perfect the swine of their breeding.

For years, the New Jersey breeders have striven to produce the

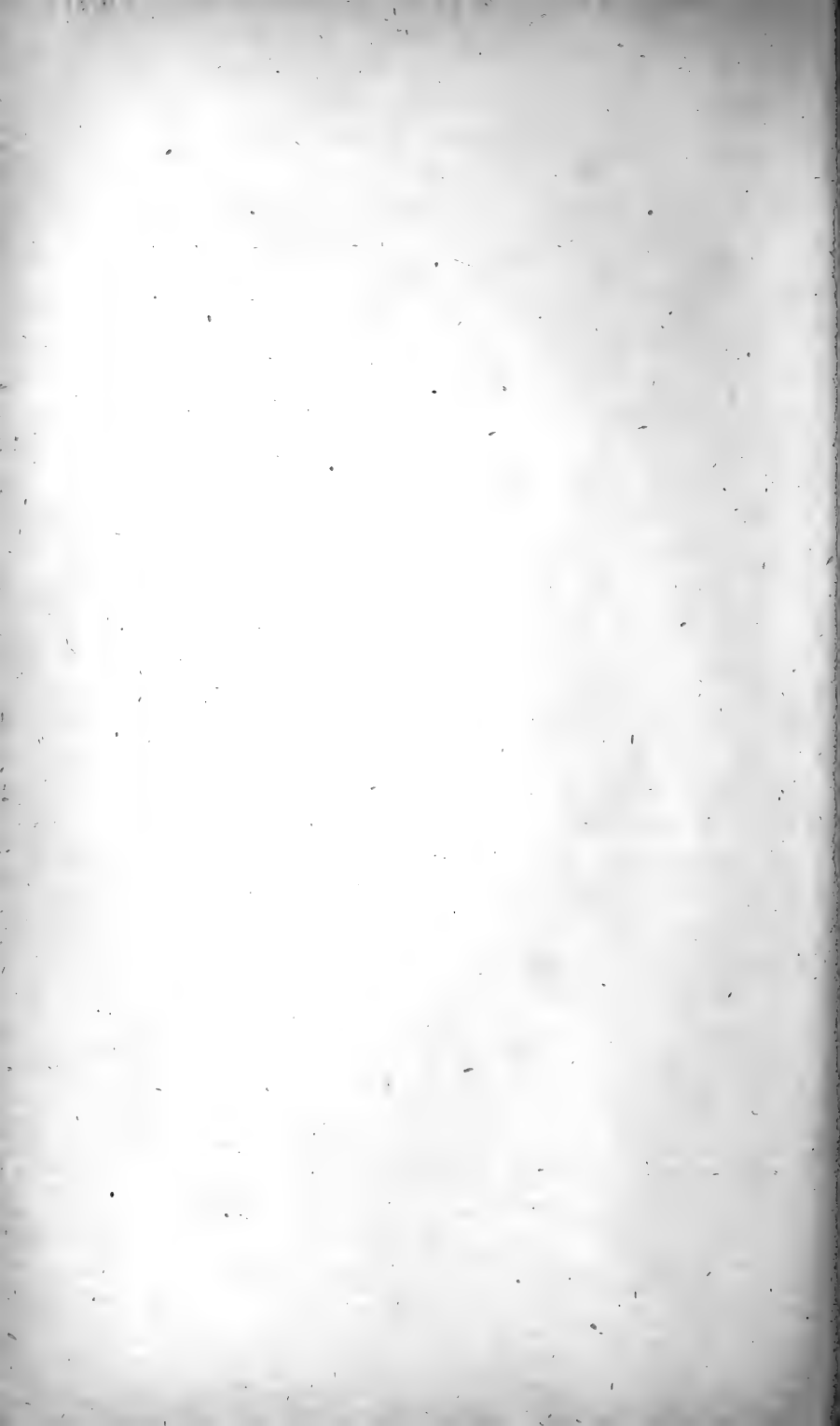
heaviest hogs in the United States, and they have succeeded. Whole litters of pigs have been fattened by them, which at one and a half years of age have averaged, dressed, seven to eight hundred pounds; and, when two years old, going up to twelve and thirteen hundred. They have well earned the reputation of "champion breeders of big weights."

There is wisdom in the consolidation of the different families of red hogs into one. This could readily be done, as none of them, including the hogs bred by Mr. Clark Pettit, were entitled to be classed as *thoroughbred*, and as there was no distinctive type settled upon for the different families, except the Duroc, which type or standard was found to be so desirable that in the first convention of the breeders of all families of red hogs it was adopted, with only a slight change, as the ideal standard for the association to follow. As a proof of its desirableness, I am informed that the association of Jersey Red breeders, of which Mr. Pettit is the head, have also adopted it. By the union of the different red families, the ability to obtain new and fresh blood is greatly extended; much beyond what it would be if confined to one family and locality. Rival antagonisms are avoided, and all breeders are brought into one fold to make it stronger to compete with other interests; weakness is made strength. The advantages of this wide range of blood, to prevent in-breeding, and to extend the strength and perpetuity of the Duroc-Jersey hogs, can scarcely be estimated, when the long future is to be taken into the account. It is a substantial foundation for a successful and permanent industry, in which the citizens of New Jersey should feel equal pride and interest with those of New York and our whole country.

NEW JERSEY

State Agricultural Society.

Annual Meeting held at Trenton, January 20th, 1886.



STATE AGRICULTURAL SOCIETY.

OFFICERS FOR 1886.

PRESIDENT.

Hon. AMOS CLARK, JR.....Elizabeth.....Union county.

VICE-PRESIDENT.

Hon. N. S. RUE.....Cream Ridge.....Monmouth county.
Gen JOHN S. IRICK.....Vincentown.....Burlington county.
E. G. BROWN.....Elizabeth.....Union county.
Hon. GEO. A. HALSEY.....Newark.....Essex county.
Hon. WILLIAM J. SEWELL.....Camden.....Camden county.

TREASURER.

CHARLES F. KILBURN.....Newark.....Essex county.

RECORDING SECRETARY.

WM. M. FORCENewark.....Essex county.

CORRESPONDING SECRETARY.

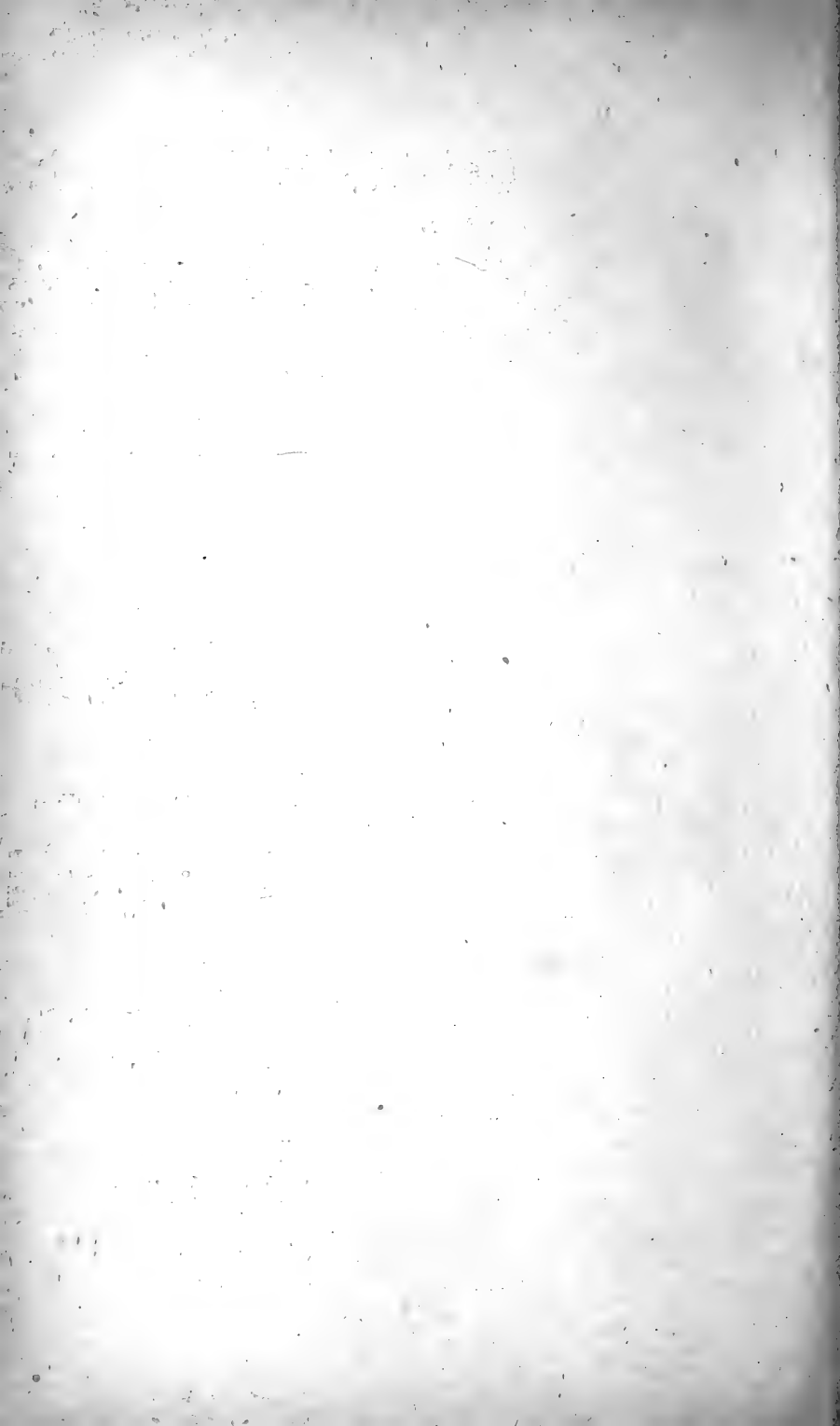
P. T. QUINN.....Newark.....Essex county.

BOARD OF DIRECTORS.

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Col. WM. A. MORRELL.....Asbury Park.....Monmouth county.
WM. M. FORCE.....Newark.....Essex county.
G. N. JOHN S. IRICK.....Vincentown.....Burlington county.
Hon. WM. J. SEWELL.....Camden.....Camden county.
ROBERT THATCHER.....Flemington.....Hunterdon county.
Hon. AM. S. CLARK, JR.....Elizabeth.....Union county.
E. G. BROWN.....Elizabeth.....Union county.
P. T. QUINN.....Newark.....Essex county.
THOS. T. KINNEY.....Newark.....Essex county.
H. N. HENRY C. KELSEY.....Trenton.....Mercer county.
JOHN BOYLAN.....Newark.....Essex county.
WM. F. KIDDER.....Grovestend.....Essex county.
WM. MCKINLEY.....Elizabeth.....Union county.
A. V. SARGEANT.....Newark.....Essex county.
JOS. COLYER.....Newark.....Essex county.
Hon. GEO. A. HALSEY.....Newark.....Essex county.
WM. S. TAYLOR.....Burlington.....Burlington county.
FRANKLIN MURPHY.....Newark.....Essex county.
CHARLES HEATH.....Newark.....Essex county.
E. B. GADDIS.....Newark.....Essex county.
R. H. ALLEN.....Chatham.....Morris county.
Hon. THOS. H. DUDLEY.....Camden.....Camden county.
FERDINAND BLANKE.....Linden.....Union county.
E. A. WILKINSON.....Newark.....Essex county.
WM. L. TOMPKINS.....Newark.....Essex county.
CHAS. F. KILBURN.....Newark.....Essex county.
GEO. B. JENKINSON.....Newark.....Essex county.
THOMAS W. DAWSON.....Newark.....Essex county.
HENRY P. JONES.....Newark.....Essex county.

EXECUTIVE COMMITTEE.

E. G. BROWN, E. B. GADDIS, WM. MCKINLEY,
H. P. JONES, WM. L. TOMPKINS.



STATE AGRICULTURAL SOCIETY.

The stockholders of the State Agricultural Society held their annual meeting in the State House, in Trenton, on Wednesday, the 20th of January, 1886. A full Board of Directors and officers for the year was elected. The twenty-eighth annual exhibition of the society will be held at Waverley Park, the Society's permanent grounds, beginning Monday, September 13th, to the 18th, inclusive. The entry books will be open one month before the exhibition, at the Society's office, 764 Broad street, Newark.

CORRESPONDING SECRETARY'S REPORT.

To the Stockholders of the State Agricultural Society :

GENTLEMEN—It is a pleasure as well as my duty to present to you, at this the annual meeting of stockholders of the State Agricultural Society, a brief and succinct outline of work accomplished by the Board of Directors and Executive Committee of the Society for the year 1885. Before entering on this part of my task, it may not be out of place to briefly refer to some few of the husbandman's industries, the promotion and fostering of which our Society has always aimed to advance by practice and precept. It is not my intention to summarize in grand totals the aggregate yields and values of the same, of the staple crops of the nation, which run up to billions of dollars, but instead to look to the part our State contributes towards those, and call your attention to the ways and means of increasing our average yield of the crops grown in our State by better methods of cultivation, and also of the feasibility of adapting our systems and crops to our surroundings. It is a fact that the market prices of farm staple crops in the last year have averaged lower than they have for twenty-five years past. The causes of these low prices are traceable, but even with a lucid explanation of the causes it makes the Jersey farmer no happier to know these facts, when he is compelled to sell his corn at

forty-five cents a bushel, his wheat at eighty, his oats at twenty-six or eight, and other crops at equally low figures. The year just closed has been unusually bad and severe on the farmers of the State, not alone from low prices, but owing to the severity of the winter of 1884, the most severe that we have had for twenty years. Winter crops were badly damaged. In wide sections of this State winter wheat, rye and barley and small fruits were winter-killed, and did not yield half a crop or half the usual yield of such crops. With a maximum yield and low prices the profits are of course lessened; but when we have only half a crop and then low prices besides, the effects are almost disastrous. In a wide range of our State this was unfortunately the case in the year 1885, which year was not a prosperous one for the farmers of New Jersey. In fact, farmers who made both ends meet at the close of this year considered themselves quite fortunate. But it can be said in truth that the farmers and fruit growers in our State are no worse off than hundreds of manufacturers, who have been struggling against hard times and a dull market for the past four years, hoping for brighter and better times, although their hopes as yet have not been realized.

The beginning of the new year is a seasonable time to make good resolves, turn over a new leaf, and, when once turned over, keep going forward. It is a well-known fact, one beyond dispute, that the average yields of the staple crops in our little State are far below what they should be, and far below what the soil is capable of yielding under an improved system of cultivation. It is pitiable indeed to look at these figures on average yields in a State like ours, with the land naturally good, and with an abundance fertilizing material within easy distance, and these fertilizers can be bought and applied with a certainty of producing a handsome and profitable return for the investment. This is not a matter of conjecture or experiment, but it has been demonstrated hundreds of times, by our best farmers, and the plan has been advocated by our most reliable scientific men. It is the accepted doctrine of our most intelligent and enlightened scientific farmers. It is also the policy which this Society has always endeavored to teach, and the Society has endeavored to get our farmers to put into practice. The difference of the average yield of the staple crops in our State, given in the United States census, and those produced by individual growers in five and ten-acre lots, is almost appalling and incredible. I will cite as an instance a few of these to show the wide margin for improvement there still exists at this time.

We have before us this time and have had for the past five or six years, the most conclusive proof, in the form of sworn testimony in crop reports, competing for the State premiums. These crop returns are sent to the State Premium Committee, under affidavits countersigned by responsible witnesses who verify their accuracy and truthfulness. These, too, are grown on plots of from one to ten acres, and come from different counties of the State, from well-known and responsible men. The State Premium Committee have recently passed their judgment on some of these crops, and among them are J. H. Denise, of Freehold, of five acres of wheat; the yield per acre is given as $43\frac{27}{100}$ bushels per acre. John H. Hubert, five acres of rye, which yielded 44 bushels of clean grain and 11 tons of straw. John H. Denise, five acres of corn, which yielded $109\frac{2}{3}$ bushels of shelled corn. Henry Campbell, of Freehold, one acre of potatoes, the yield of which was 204 barrels, or over 500 bushels to the acre. Ralph Cooper, of Pompton, one-quarter acre of onions, 180 bushels, or at the rate of 720 bushels to the acre. John Van Storm, one acre of grapes, 13,151 pounds, and Henry Campbell, of Freehold, one acre of apples, the yield of which is 250 barrels, or over 1,000 bushels to the acre. I give these few, picked out of the number sent in to the committee, to show what our soil is capable of producing under proper and intelligently directed cultivation, and further to show the difference between the average yield of the State and the returns just given. The average yield of corn in the State is 39 bushels, of wheat $13\frac{1}{2}$, and rye 18 bushels, and potatoes under 74 bushels, and other crops equally low. But in the State premium crops, we have 109 bushels of corn, 44 bushels of rye and 500 bushels of potatoes, each grown on an acre of measured ground in our State. It is only since the State premiums have been offered through this society, that these large yields have been widely known, and they have without doubt been the means of doing great good to incite rivalry, and encourage better systems of culture and better and more profitable returns for the labor and capital invested.

The publication of these large crop returns in the annual reports of the State Board of Agriculture brings them before the best farmers of the State, who are likely to equal if not surpass the large yields of cereals, fruits and vegetables, by adopting the same systems. There is only one suggestion which I desire to make on this subject, and that is, that this year the State Premium Committee should double the amounts of these premiums for farm and garden crops.

It is an agreeable fact to record here that the Executive Committee chosen a year ago have acted in harmony, and with true earnestness, with the officers of the Society, adopting and faithfully carrying out such plans as in their judgment they thought would advance the best interests of the Society.

Since I have been officially connected with this Society (now sixteen years) there has been no Executive Committee who have worked with more energy, harmony and earnestness for the good and welfare of the Society than the Executive Committee of 1885. They deserve the thanks of the stockholders of this Society for the faithful performance of their arduous duties, given gratuitously, for the benefit of the Society. I will say here what I have said in a former report, that to be a member of the Executive Committee means responsibility, hard work, care and anxiety, if the allotted duties are well done, and I can bear testimony that they have during the past year. In the discharge of their duties the Committee have met many times and the meetings are protracted from two to four hours each. The natural and steady growth of the Society calls for more labor on the part of the officers and Executive Committee, and this is sure to follow when the affairs of the Society are managed on business principles. To enumerate in detail the multiplicity and great variety of work which comes before the Executive Committee during the year would take more space than is usually allotted to my annual report. It is sufficient to say that every subject and item is as carefully considered before the work is ordered as if it belonged to the business of an individual or private firm. To make our exhibitions a success, the first and most important question is to provide liberal accommodations for exhibitors in each department, and, secondly, and not less important, is that of providing liberal accommodations for visitors to the fair grounds. On these two features rests largely the success or failure of an agricultural exhibition. If we are to judge from results, as business men usually do, the exhibitors must have been tolerably well cared for by this Society for the last dozen or more years. In looking over the table of entries of exhibitors since 1874 to the present time there has been a steady and marked increase every succeeding year, with but two exceptions, and these two were only a trifle below the growing average. There is no reason why this increase in the entry department should not continue in the future as it has in the past ten years.

TABLE OF ENTRIES FROM 1874 TO 1885.

The following table gives the number of entries in each department, and the total number of entries each year since 1874:

DEPARTMENT.	1874	1875	1876	1877	1878	1879	1880	1881	1882	1883	1884	1885	EXHIBITS.
Special State.	59	70	106	106	148	124	170	146	149	106	155	140	{ Horses, cattle, sheep and swine.
Speed	52	98	105	99	98	149	.....	103	126	107	66	107	Speed.
Departm't A..	107	72	68	73	76	78	109	62	75	46	.....	74	Horses.
" B..	392	431	633	715	818	757	950	963	837	845	984	972	{ Cattle, sheep, swine and poultry.
" C..	817	961	1005	1456	1140	1763	1697	1492	1467	1913	1998	2027	Farm products.
" D..	548	701	705	1416	946	702	1122	1091	1021	1182	1269	1113	Ladies' needle-work, etc.
" E..	164	182	233	256	291	415	540	793	521	477	639	729	Canned goods, honey, etc.
" F..	32	154	139	207	192	263	275	232	207	238	219	321	Farm machines, tools, etc.
" G..	69	72	16	40	47	28	49	50	50	57	83	94	Carriages, wagons, etc.
" H..	29	52	36	37	.....	211	204	{ 86	64	52	57	34	{ Household furniture, woolen goods.
" I..													{ Manufactured goods.
" K..	97	114	115	136	214	142	177	183	255	300	219	355	Fine arts, etc.
" L..	81	97	88	140	159	15	34	72	77	35	60	49	Sanitary appliances.
" M..	.....	.....	.....	.....	.....	.....	.....	.....	35	16	24	37	Dairy goods.
Total.....	2447	3004	3249	4681	4129	4687	5491	5394	4967	5579	5885	6184	

LIST OF LIVE STOCK ENTRIES.

HERDS.

Ayrshires.....	2	Holsteins	4	Short Horns	2
Guernseys	1	Jerseys	3	Grades.....	4
Number of herds.....	16	Number of animals in herds	80		

SINGLE ANIMALS.

State Classes.				Society Classes.			
Ayrshires ..	Bulls, 3	Cows, 6		Ayrshires.....	Bulls, 14	Cows, 20	
Holsteins	" 5	" 8		Holsteins.....	" 17	" 32	
Guernseys..	" ..	" ..		Guernseys.....	" 5	" 6	
Jerseys.....	" 9	" 6		Jerseys	" 11	" 33	
Short Horns.....	" 2	" 4		Short Horns.....	" 3	" 9	
Grades ..	" ..	" 18		Grades	" 2	" 21	
Herefords	" ..	" ..		Herefords	" 1	" 4	
				Swiss.....	" 3	" 3	
Totals.....	19	42		Totals.....	56	128	

Number of animals shown in State and Society classes.....325

SHEEP.

State Classes.				Society Classes.			
Cotswolds	Ewes, 3	Rams, 2		Cotswolds.....	Ewes, 24	Rams, 9	
Leicesters	" 6	" 2		Leicesters	" 24	" 6	
Hampshires	" 6	" 2		Hampshires	" 18	" 11	
Oxforddowns	" 6	" 2		Oxforddowns	" 9	" 6	
Merinoes	" 3	" 2		Merinoes	" 9	" 3	
Shropshires	" ..	" 1		Shropshires	" 15	" 8	
Southdowns.....	" 9	" 3		Southdowns.....	" 30	" 15	
	—	—		Lincolns.....	" 3	" 1	
Totals.....	33	14		Totals.....	132	59	
Total.....							238

SWINE.

State Classes.				Society Classes.			
Chester Whites ..	Boars, 1			Chester Whites..	Boars, 7	Sows, 11	
Berkshires	" 2			Berkshires	" 5	" 3	
Essex ..	" 2			Essex.....	" 4	" 3	
Jersey Reds.....	" 3			Jersey Reds	" 3	" 7	
Poland-China.....	" 3			Poland-China....	" 4	" 8	
Yorkshires.....	" 3			Yorkshires.....	" 3	" 9	
Total.....	14			Totals.....	23	41	

Total number of sheep and swine entered for State and Society
 Premiums.....316

These figures, taken from our entry books, speak more forcibly than words of the growth and growing popularity of our Society. They also show the necessity, from a business standpoint, of making permanent improvements to meet the increase in exhibits in nearly all of the departments. It is to be hoped that the incoming Board of Directors will carry out the intentions of the retiring board, that is, to extend and improve the grand stand; build more new cattle sheds on the grounds from year to year, as necessity dictates their need; erect a light and spacious shed to exhibit steel tools and implements; build an extension to the poultry house; and, what is still of the greatest importance, and an absolute necessity, the construction of commodious water-closets in different parts of the grounds. In my last year's report I urged that an effort be made to get horse rail communication from Newark to the fair grounds. I again bring this matter before your attention, and in doing so feel that if we had such communication, the grounds would be in constant demand during the summer months, bringing in a steady and large revenue every year.

It is a matter well worth your consideration. These are a few of the most noticeable improvements or additions which are needed in and about the fair grounds at Waverley, to keep pace with present demand for more and better accommodations for exhibitors and visitors.

The proposition to construct a large building for a "bench show" was before the Executive Committee for two months last summer, and, after mature deliberation, the Committee was unanimous not to erect a building, which would cost not less than \$8,000, without submitting the question to the stockholders. The State Kennel Club were willing to enter into an agreement to hold a dog show for five consecutive years, and give the Society forty per cent. of their admission fees, and the Kennel Club to be responsible for all the running expenses. This proposition, I understand, is still open for acceptance or rejection.

As the President has informed you in his address, the fair of 1885 was a success. The weather was perfect from the beginning to the end. The exhibits were equal if not superior in quality, and larger in number, than any other exhibition held by this Society, and the attendance of visitors was above the average in numbers. The success of the exhibition financially you have in the Treasurer's report, both in receipts and disbursements, which tells the tale in full. A part of these disbursements is a dividend of six per cent., ordered paid by the directors, at their meeting in Newark, in October last, of which fact you had substantial evidence some two months ago in the form of the Treasurer's check for the respective amounts due you on the stock of this Society which you own.

Before closing this brief outline of the work accomplished by this Society the past year, I desire to add a word which I feel you will all indorse. It makes no difference whether we are stockholders or members of this Society or not; we are Jerseymen, proud of our little State and her past history, and as Jerseymen we are one and all anxious to further and foster her interests and add by this means to her peace, welfare and prosperity. Our mission as good citizens should be to enlighten and elevate her agricultural industries, advance and increase her material wealth, and the number of her quiet, peaceful, happy and prosperous homes. By aiding in this noble work we are only performing the duties of loyal and true citizens of the State of New Jersey.

P. T. QUINN,

Corresponding Secretary.

TRENTON, January 20th, 1886.

TREASURER'S REPORT FOR YEAR 1885.

ELIZABETH, N. J., January 14th, 1886.

WILLIAM A. CLARK, *Treasurer*,In account with NEW JERSEY STATE AGRICULTURAL SOCIETY,
from January 1st, 1885, to January 1st, 1886.

RECEIPTS.

GENERAL ACCOUNT.

Cash on hand January 1st, 1885.....	\$928 57
“ from Mutual Driving Association.....	600 00
“ “ Waverley Driving Association.....	500 00
“ “ Stall Rents.....	107 50
“ “ Estate of P. Jones.....	77 00
“ “ William M. Force, Recording Secretary.....	30 00
“ “ N. Y. and L. B. R. R., Account of Fair, 1883.....	80
	<hr/>
	\$2,243 87

FAIR ACCOUNT.

Cash from Gate Admissions.....	\$9,861 53
“ “ Grand Stand.....	919 00
“ “ Special Privilege.....	1,810 00
“ “ Stand Rents.....	4,286 00
“ “ Railroad Admissions.....	7,347 58
“ “ Speed Entries.....	1,977 50
“ “ “ Programme.....	125 00
“ “ Stall Rents.....	25 00
“ “ Society Entries.....	578 30
	<hr/>
	26,929 91
	<hr/>
	\$29,173 78

DISBURSEMENTS.

GROUND ACCOUNT.

Cash for Haying.....	\$96 51
“ Tools and Implements.....	149 17
“ Overseer of Ground.....	541 71
“ Help to Overseer.....	134 62
“ Stable Account.....	78 98
	<hr/>
	\$1,000 99

GENERAL ACCOUNT.

Cash for Account Fair 1884.....	\$65 44
“ Office Rent.....	75 00
“ Interest.....	60 00

Cash for Insurance.....	\$79 93	
" Taxes	264 00	
" Premium, Mutual Benefit Life.....	75 10	
" Treasurer's Office Expense	88 42	
" Secretary's Office Expense.....	334 27	
" Directors' Dinner.....	183 25	
" Salaries.....	2,000 00	
" N. T. Association Membership.....	56 00	
" Survey and Map.....	25 00	
	<hr/>	\$3,306 41

IMPROVEMENT ACCOUNT.

Cash for New Buildings, Stalls, &c.....	\$381 00	
" Labor and Materials for Repairs to Buildings	772 74	
" Whitewashing.....	70 00	
	<hr/>	1,223 74

FAIR ACCOUNT.

Cash for Help and Expenses.....	\$437 20	
" Supplies Bought for Fair.....	212 55	
" Judges, Superintendents and Help.....	1,319 00	
" Advertising.....	651 05	
" Printing, Stationery and Tickets.....	366 80	
" Posting Bills.....	182 81	
" Press Entertainment.....	168 00	
" Refectory at Fair.....	331 85	
" Band	116 00	
" Stand Account.....	200 00	
" Police and Watchmen.....	307 00	
" Recording Secretary's Fair Expenses.....	87 23	
" Treasurer's Office, Ticket and Gate Expenses	376 43	
	<hr/>	4,755 92

PREMIUM ACCOUNT.

Cash for Speed Premiums	\$3,960 00	
" Dep't A, "	776 00	
" " B, "	2,677 75	
" " C, "	816 00	
" " D, "	293 50	
" " E, "	110 50	
" " F, "	356 00	
" " K, "	215 00	
" " M, "	54 00	
" Diplomas, Medals, &c.....	249 00	
" State Premiums 1884.....	445 00	
	<hr/>	9,953 65

DIVIDEND ACCOUNT.

Cash for Account Dividends, 1883.....	\$5 00	
“ “ “ 1884.....	56 00	
“ “ “ 1885.....	5,403 00	
	<hr/>	\$5,464 00
		<hr/>
		\$25,704 75
Balance.....		3,469 03
		<hr/>
		\$29,173 78

WILLIAM A. CLARK,
Treasurer.

NEW JERSEY

State Horticultural Society.

REPORT FOR THE YEAR 1885.



STATE HORTICULTURAL SOCIETY.

OFFICERS FOR 1886.

PRESIDENT.

ALEX. W. PEARSON.....VinelandCumberland county.

VICE-PRESIDENTS.

GERRY VALENTINE.....	Hammonton	Atlantic county.
E. S. CARMAN.....	River Edge	Bergen county.
GEO. W. ROGERS.....	Mt. Holly.....	Burlington county.
EZRA STOKES.....	Berlin.....	Camden county.
J. D. COLE.....	Deerfield.....	Cumberland county.
JOSEPH B. WARD.....	Newark.....	Essex county.
JOHN REPP.....	Glassboro.....	Gloucester county.
C. W. IDELL.....	Hoboken.....	Hudson county.
E. P. TOMLINSON.....	Rosemont.....	Hunterdon county.
JOHN M. WHITE.....	New Brunswick.....	Middlesex county.
CHARLES BLACK.....	Hightstown.....	Mercer county.
JNO. S. GREEN.....	Morristown.....	Morris county.
D. A. VANDEVERE.....	Manalapan.....	Monmouth county.
GEO. C. WOOLSON.....	Passaic.....	Passaic county.
RUFUS W. SMITH.....	Elmer.....	Salem county.
D. C. VOORHEES.....	Blawenburgh.....	Somerset county.
E. P. BEEBE.....	Elizabeth.....	Union county.

RECORDING SECRETARY.

E. WILLIAMS.....Montclair.....Essex county.

CORRESPONDING SECRETARY.

J. T. LOVETT.....Little Silver.....Monmouth county.

TREASURER.

CHAS. L. JONES.....NewarkEssex county.

EXECUTIVE COMMITTEE.

WM. R. WAED.....	Newark.....	Essex county.
C. W. IDELL.....	Hoboken.....	Hudson county.
RALPH EGE.....	Hopewell.....	Mercer county.
E. P. BEEBE.....	Elizabeth.....	Union county.
JOHN C. VAN DOREN.....	Manalapan.....	Monmouth county.

FRUIT COMMITTEE.

J. B. ROGERS.....	Milburn.....	Essex county.
WM. H. GOLDSMITH.....	Newark.....	Essex county.
CHARLES BLACK.....	Hightstown.....	Mercer county.
ELI MINCH.....	Shiloh.....	Cumberland county.
DAVID BAIRD.....	Manalapan.....	Monmouth county.

FLOWER COMMITTEE.

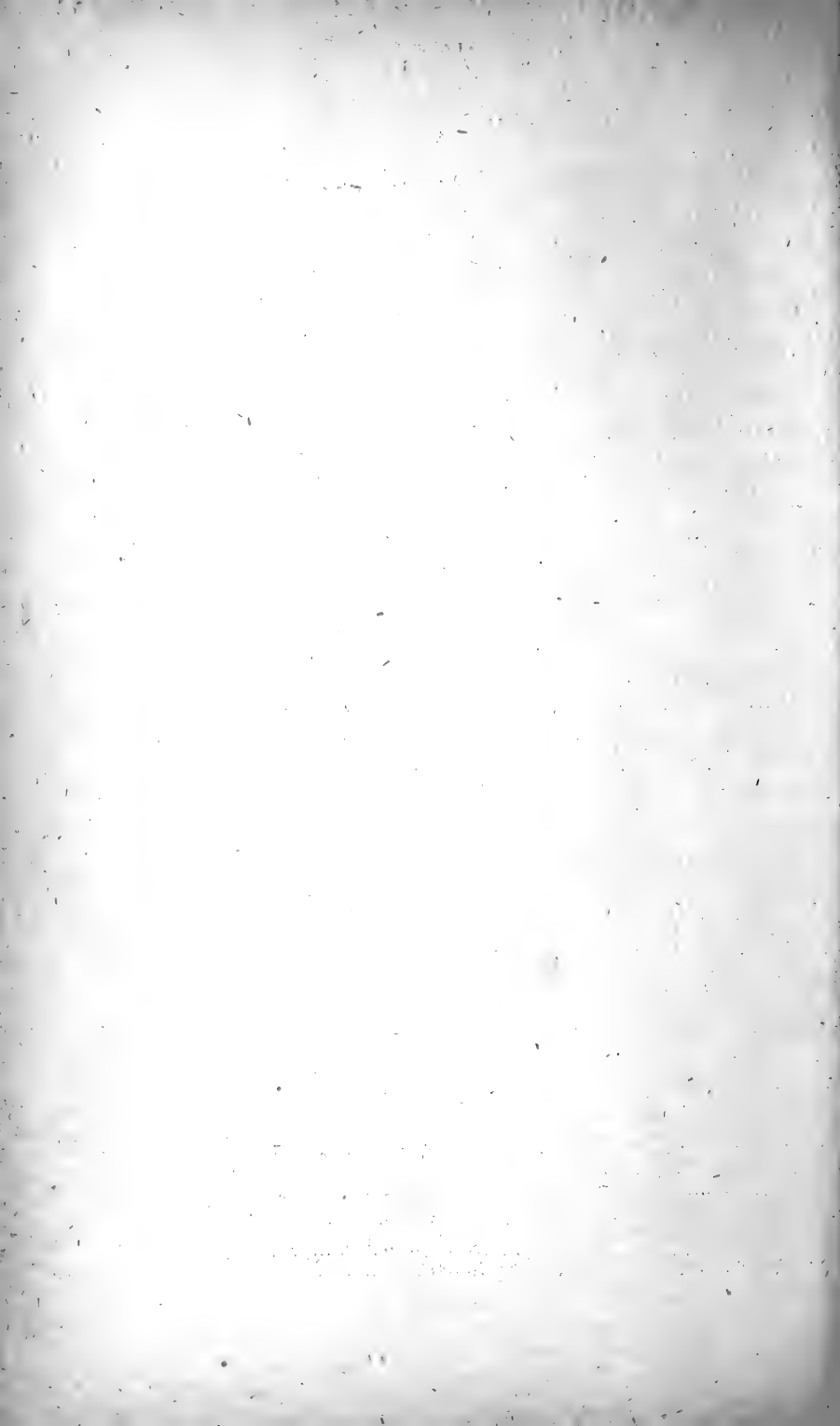
THEODORE EDWARDS.....	Bridgeton.....	Cumberland county.
CHAS. B. HORNOE.....	Mt. Holly.....	Burlington county.
C. RIBSAM.....	Trenton.....	Mercer county.

VEGETABLE COMMITTEE.

THEO. F. BAKER.....	Bridgeton.....	Cumberland county.
FRANKLIN DYE.....	Trenton.....	Mercer county.
J. B. WARD.....	Newark.....	Essex county.

DIRECTORS OF STATE BOARD OF AGRICULTURE.

E WILLIAMS.....	Montclair.....	Essex county.
WM. R. WARD.....	Newark.....	Essex county.



STATE HORTICULTURAL SOCIETY.

The State Horticultural Society held its eleventh annual meeting in the Assembly Chamber of the State House, at Trenton, December 29th, 1885. The meeting was called to order a few minutes after 10 o'clock by President Baker, who stated that we again assembled in this city by invitation of the Mercer County Board of Agriculture.

Ex-President Ward, of Essex, arose and said Mr. Ege, the President of the Mercer County Board of Agriculture, was present, and he would call on that gentleman for a few remarks.

Mr. Ege responded with the following words of welcome :

MR. PRESIDENT AND MEMBERS OF THE NEW JERSEY STATE HORTICULTURAL SOCIETY—To those of us who are deeply interested in the science of horticulture it is exceedingly gratifying to know that your meeting in this place one year ago was attended with so much encouragement, and was such a decided success that you have honored us with another visit, and, in behalf of the Mercer County Board of Agriculture, it again becomes my privilege to extend to you a cordial welcome, and pledging you our hearty co-operation in every effort put forth to promote and advance the interests of your Society, and in so doing let me assure you that I not only echo the sentiments of the members of our organization, but of all those interested in horticulture who were so fortunate as to attend the interesting and instructive meeting of last year.

The science of horticulture is making more rapid advancement than any other branch of the farmer's calling, and he must be wide awake indeed who would keep pace with its progress. Very many of the old methods are being discarded and cast aside and new theories advanced and supported by those who stand in the front rank among our most successful fruit growers, and it is a fact worthy of more than a passing notice that there is no branch of our calling which will awaken so much enthusiasm and such intense interest as that which

has called us together on this occasion. It must be admitted that there is also a rapid development and advancement in other departments of our agriculture: such as the improvement of our breeds of useful animals, and a more thorough and intelligent cultivation of the cereals; but these do not interest the progressive New Jersey farmer as much as formerly, for he feels that in order to avoid competition with the vast stock-raising and grain-producing States of the great West he will be soon compelled to abandon the production of bread and meat as profitable sources of income, and turn his attention to the cultivation of those products which from their perishable nature cannot be shipped long distances with profit.

We have in our county all the natural advantages favorable to such productions, and the exhibition of fruits and vegetables at the fair held by our Board last fall compared favorably, both as to quality and quantity, with any exhibition of the kind held in the State, and I have no doubt that its success was largely the result of the *shaking up of the dry bones* which was received through the meeting of your Society here last winter. And now, sir, in closing, let me say that we sincerely hope that at this meeting you will give us another such a shaking up that next year we may be able to report still greater achievements as the result of efforts put forth by this Society to awaken and stimulate an increased interest in this, the most profitable branch of our husbandry.

To this President Baker responded as follows:

GENTLEMEN OF THE MERCER COUNTY BOARD OF AGRICULTURE—Allow me, in behalf of this Society, as its presiding officer, to thank you for your kindly welcome to this, the capital of our State, the second time. It is exceedingly gratifying to us, as horticultural workers, that our efforts are not fruitless, and that the short time spent with you during our last annual meeting proved sufficiently interesting and profitable that you have allowed us again to renew and strengthen our brotherly relations, and as well our minds and purposes, through your and our experiences of the past year.

A society like ours needs a reason and a purpose for its existence.

In the one case we have sufficient reason in the circumstances surrounding us—a soil adapted to fruits and vegetables of all kinds, and markets at our very doors sufficient to consume all we have to offer.

Only a few years since gardening was unknown to the greater part of our State; Newark gardens supplying New York, and the gardens in the neck of Pennsylvania furnishing Philadelphia.

The rapid strides and outgrowth of horticulture in our State has been unprecedented, and to-day finds thousands of acres devoted to its culture, and even towns, which owe their prosperity and existence entirely to horticulture, have sprung up in almost barren wastes.

While such encouragements meet our efforts, is it not sufficient reason that we should purpose to pursue our course, and combine to fight against our numerous insect enemies, fungi and the general ignorance of the cultivation and proper management of our orchards and gardens?

We have kindred societies in many sister States who are fast finding out the cause and effect, the remedies and methods of applying them, for our numerous pests, also the wants and application of proper elements to fertility. Unless we combine our efforts, close up our ranks and advance in one solid column, our reasons for this Society will be gone, our purposes trampled under foot, and our future income cut off by our insect enemies and our more enterprising neighbors.

Therefore, allow me to urge every one present, who has a tree, shrub, vine or plant, which he cultivates, to join us in our efforts and add his mite of experience, knowledge and observation, during the past season, to the general fund of this meeting.

The Secretary announced the credentials of the following Delegates as correct:

I. W. Nicholson, Haddon Grange, Patrons of Husbandry.				
Geo. T. Haines,	"	"	"	"
Joseph O. Cuthbert,	"	"	"	"
John S. Collins, Moorestown	"	"	"	"
D. A. Vandevere, Monmouth Grange, Patrons of Husbandry.				
David C. Rulon, Crosswicks	"	"	"	"
Edwin Satterthwaite, Crosswicks Grange, Patrons of Husbandry.				
Alice A. Satterthwaite,	"	"	"	"
Joseph Hendrickson,	"	"	"	"
Abbie S. Hendrickson,	"	"	"	"
Elizabeth A. Rogers,	"	"	"	"

A cordial welcome was extended to them, and it was hoped that they would feel at home and participate in the proceedings.

Next in order came the reports of the Recording Secretary, Treasurer and Standing Fruit Committee.

Messrs. John Wilcox, of Vineland, and Thomas J. Beans, of Moorestown, followed with papers on

FRUIT CULTURE—HAVE WE ATTAINED THE GREATEST PERFECTION IN FRUIT CULTURE?

Which led to the following discussion :

The Secretary took exception to the statement "that the poor could not supply their families with an abundance of fruit at current prices."

Mr. Idell.—Nothing can be bought in New York markets cheaper than our native fruits. None so poor but he can eat fruit to his heart's content. There is a class of people constantly finding fault with price of food products who can spend their money freely for beer and whiskey without a word of complaint. This is the class who find the most fault in New York.

Mr. Wilcox.—The statements of the two gentlemen are quite correct, regarding the fact that fruit and all articles of subsistence are exceedingly low. What produces these articles? Labor, of course; and the labor that produced them must have been poorly paid.

The Secretary.—Not necessarily so.

Mr. Wilcox.—You must understand that a laborer getting a dollar a day must first provide his family with the necessaries of life before he can indulge in luxuries. Many laborers are intemperate; and I don't know but they have as good a right to be so as have the wealthy. But this proves nothing.

Mr. Quinn hoped the discussion would have taken a different turn, that we might consider the question whether we had arrived at perfection in fruit culture. He did not consider that we had made much progress in twenty-five years. He did not know of a good pear, except Clapp's Favorite, which had been introduced within that time, and no strawberry that had superseded the Wilson. We had advanced in methods of culture and in amount of production, if that could be called perfection. He saw hundreds of quarts of strawberries sold the past season at six cents a quart, and one would suppose the poor could indulge freely. The same is true of all other native fruits, and their cost should not prevent any one from indulging to his heart's content.

The Secretary asked if the speaker had not forgotten Dana's Hovey pear?

Mr. Quinn thought Dana's Hovey was introduced more than twenty years ago. There were now thousands of crates of fruit sold where there were fifty sold twenty years ago.

The Secretary.—True; and thousands more mouths to eat them.

Mr. Ward.—Aside from Mr. Quinn's suggestion, in regard to new varieties, there is another point we should think of. If we say we have reached perfection in theory we certainly have not in practice, as regards quality of our fruits. The strife has been to see how much fruit could be thrown on our markets, from extension of orchards and gardens. One thing to which we may attribute the low price of fruit is that a large proportion of it is comparatively worthless, or of inferior quality. This comes from carelessness and lack of proper attention on the part of the producer. If we were to produce half the quantity and improve the quality it would bring more remunerative prices. The apparent low price of poor fruit has a depressing effect on the sale of a really good article.

Mr. DeCou said we would all agree that it was better and more profitable to produce small crops of good fruit than large crops of inferior, but, with all our best efforts, the latter resulted oftentimes from contingencies beyond our control. The aim of the cultivator was good fruit. The result of his efforts was often the reverse of that aim, from causes unavoidable.

President Baker said the tendency is to attempt too much. If he chanced to succeed with a small bed of strawberries, a neighbor would try to outdo him by planting too many, often losing by the operation. Often a lack of attention to the details causes loss. His own strawberries averaged ten to twelve cents per quart during the season; some brought twenty-five to thirty-two cents a quart. They were fine fruit, and put up and placed in market in good shape.

Mr. Hale was surprised at the silence with which Mr. Quinn's remarks were received. Are we to let it go out that no new fruits of value have been added to our lists during the past twenty years, except the pears mentioned? What of the Cuthbert raspberry? the Worden, Brighton and Niagara grapes? the Sharpless, Manchester and Jewell strawberries? Are these and others not to be considered as new fruits of value produced in that time?

Mr. Beans cited the fruit shown at a recent Moorestown fair, as showing a marked improvement over that exhibited a few years ago.

Mr. Quinn reiterated his belief that we had no strawberries to supersede the Wilson and Downing ; the former for long carriage, the latter for near-by markets. In the Southern States one hundred acres of the Wilson are planted to one-half an acre of any other kind.

Mr. DeCou remarked that it was not due to any lack of effort to bring out new varieties, which are tried, found wanting and passed by. It only shows how difficult it is to improve on the established varieties.

Mr. J. M. White, of New Brunswick, N. J.; E. P. Tomlinson, of Rosemont, N. J., and David Baird, of Manalapan, N. J., followed with papers on the important subject of

PEACH CULTURE AND THE YELLOWS.

The following is a synopsis of the points covered: The peach is regarded and as generally managed is short-lived, though trees have been known to thrive to the age of fifty or one hundred years in some favored locations, and they would in others but for the yellows.

This is now generally acknowledged to be a fungus, is contagious, can be propagated from seed by budding, or even inoculated by the knife in pruning ; seems to disappear in dry seasons and reappear in wet ones, as though excessive moisture might be an agent in spreading or communicating the disease. According to Professor Taylor, microscopist, "contact with water will dissolve parasitic fungi without destroying the spores." If so, it is evident the action of rain will tend to diffuse the spores over the body and roots of the tree. Solutions of sulphuric acid and alkies, he adds, will destroy them.

Treatment should be mostly preventive. Plant healthy trees, from healthy seed gathered from sections where the disease is unknown ; use buds from healthy stock, and plant on ground not before set to peaches. Eradicate, root and branch, on first appearance, every tree showing sign of disease, and apply alkies to neutralize or destroy the fungus. A law should compel careless growers to pull out and destroy their diseased trees on the same principle that we have laws to prevent the spreading of noxious insects. Experiment stations should make a study of the disease to find, if possible, a remedy and ascertain the best fertilizers to keep the trees vigorous. In one instance last summer an application of nitrate of soda to an old,

exhausted tree caused it to take on a dark-green, vigorous appearance, which it held through the season, in striking contrast with its starved neighbors.

The most successful growers use potash in some form or in combination with phosphoric acid. Some depend almost entirely on bone-dust alone. A few succeed fairly well with stable manure. Muriate of potash and fine bone, or boneblack, in the proportion of two to three, and four to six pounds to the tree, can be safely recommended. One used kainit with ground bone in preference to muriate of potash, as in every ton of the former he probably got eighty pounds of sulphate of magnesia and two hundred pounds chloride of magnesia and about forty-five pounds chloride sodium, which he considers destructive to fungus growth. Most of the orchards in his vicinity have also been well limed. Powdered sulphur was said to be a specific for yellows if applied to the roots of the trees.

Ravages of the borer, undrained and insufficiently fertilized soil, contribute to unhealthy conditions of the peach often mistaken for yellows. One skeptic did not believe in the yellows theory; if some one would supply him some pure pedigree seed thoroughly contaminated with yellows he would agree to grow healthy trees three to four feet high the first year. Keep out the borers; thin the fruit when overloaded—this often doubles the market value of the crop besides keeping the trees vigorous, as shy bearers live longer and attain greater size. Give good cultivation and sufficient fertilizers to keep the tree in healthy growth. In congenial soil trees properly treated will continue in bearing ten to thirty years, and more than pay cost of land each bearing year; even a partial crop will sometimes prove more profitable than a full one.

Although Downing catalogues nearly five hundred varieties, the best and most popular now in general cultivation are of New Jersey origin. Among them are Troth's Early, Mt. Rose, Reeves' Favorite, Stump, Crawford's Early and Late, Fox's Seedling, Smock and Key-port White. These are standard sorts in every collection, ripening in succession and giving a continuous supply of fruit almost from earliest to latest. The discussion tended to the impression that of all the early peaches introduced of late years there has been no improvement on the Alexander and Amsden, and of the large late red ones ripening in October, after sifting them out they had not essentially differed from Crawford's Late, the difference being due to peculiar location or surroundings.

Our location, between New York and Philadelphia, with our own cities and towns, besides the vast multitudes that throng our coast in August and September, making our ocean front one continuous city from Sandy Hook to Cape May, gives a home market and enables us to place our fruit on sale in that perfection of color and flavor only attained by fully maturing on the tree. In that condition no other fruit equals it, and no wonder none will compete with it. The crop in New Jersey will be found, taking a number of years in succession, greater than in localities further south, and the profits largely in our favor. Much of the thrift and improvement in New Jersey is due to the income from this fruit. Said one to me: "That orchard paid for my farm." Another: "The net receipt in two years from 1,800 trees was \$2,900." The Assessor of our town says: "I find those parties who are growing peaches are reducing their liabilities."

One large grower stated last summer that he received \$10,000 per week for his shipments, and another obtained \$1.15 to \$1.30 per basket from his wagon at the depot for one variety from trees thirty years old. These growers, especially the last, must have followed the injunction to "Dress the garden and keep it." How do these results compare with those from other fruits? In case of the pear we constantly hear of failures in loss of trees. The pear market seems to be fully supplied and the last year at lower prices than ever. One had been attempting to grow apples, peaches and pears, together with small fruits, and submitted as the result of his thirty years' observations and experience that there is more profit to be derived from careful and judicious cultivation of the peach than from any other fruit on the list.

Prof. Arthur.—I am exceedingly interested in the question of Peach Yellows, especially as to the cause of the disease. I have not had wide experience, but from the examinations I have made of trees, said to have the yellows, I have drawn some conclusions.

First. It seems to me quite reasonable to suppose that we have to do with a genuine disease. I do not refer to those cases where the trees have made a sickly growth and the leaves are yellow from reasons that may be readily assigned, such as want of proper fertilizing, drainage, soil, or care, or from insects or fungi that can be seen with the naked eye. I do not think any of these things cause the genuine yellows, but am inclined to think that it is due to something aside from all these. If it is a contagious disease it surely is not caused by

any of these things. I have examined specimens which I have no doubt were cases of genuine yellows, if there is such a specific disease.

I am interested in pear blight, and for that reason I am interested in this question. They are often coupled together, though I consider them very different diseases. I do not think they are any more closely related than consumption and small-pox, for instance. In pear blight it is easy to discover the bacteria, which we know are the cause of the disease; any one can see them in the mass with the naked eye, as I will explain later. The same appearances as to bacteria cannot be obtained with the peach yellows. Careful examination of trees affected by this disease reveals no bacteria in quantity; I do not say bacteria may not cause the disease, but there is no such abundance of them as in pear blight. If they occur in the yellows it will require special manipulation to demonstrate them as it does in consumption; they certainly are not abundant and easily found.

Mr. Augur, of Connecticut.—I do not live in a peach-growing State, but there are several enterprises of this kind in Connecticut of considerable magnitude. This fruit is unrivaled in excellence and beauty, and we are all interested in the health of the trees. A few years ago I noticed in Delaware they were comparatively free from the yellows, more so than in any other locality, though they claim not to have the disease in the South at all, but I found some well-marked cases in Tennessee, and I have more doubt about getting healthy seed from there than I had before.

I do not think the cause or remedy for this disease is well understood. Some say the cause is starvation. There are circumstances which seem to develop a yellow color of the leaf when there is no specific disease aside from neglect, yet I think there is a disease which is malignant and very destructive to peach orchards. What shall we do about it? I do not feel that I can instruct you on that point, but I have thought that in the first place, we ought to be very careful to avoid seed that is contaminated, for I think the disease is hereditary. When we get a package of seed, half of which has come from trees having the yellows, we shall get the disease, as well as through the buds from affected trees. Suppose we have healthy trees from healthy sources, how shall we escape the disease? I noticed in Delaware a very general use of lime. All the planters recommended its use. I asked one of them the object of using it, and he said to sweeten the land. Not a very scientific answer, it is true, but there may have

been a good deal of truth in it after all. We use alkali to sweeten dough, and I am inclined to think the sanitary influence of lime on the soil is more than we have usually estimated.

I think it is a valuable application, though I do not claim it as a specific for this disease of peaches. Potash, kainit, salt, &c., I am inclined to think well of. Yet if a tree is badly diseased I doubt if any of these would cure it. I think the tree should be destroyed. I think the greatest safeguard is to avoid getting the disease. An ounce of prevention is better than a pound of cure in this case. We should be very careful to get the seed from healthy trees and from a healthy locality.

I would not depend on any locality being free from the disease. We should know the orchards and trees we get our seed from. I consider the Smock desirable for seed, if the trees are healthy. I know some trees now that are 40 years old. I think fertilizers and condition of the soil have much to do with the health of the trees.

One of the most successful breeders of cattle in Connecticut lays great stress on the matter of feeding. He feeds the new-born calf regularly, judiciously and systematically from first to last. I think this rule should apply to the vegetable kingdom. We have missed our peach crop in Connecticut for two years, it being destroyed by severe cold or by warm weather in winter, and we need more hardy varieties, or those that will resist more cold, or the great variations of our climate.

Mr. Ward proposed that the discussion close and we proceed to another subject.

WHAT PEARS TO PLANT FOR PROFIT IN NEW JERSEY.

Mr. Parry read a long paper on this question, detailing his experience for forty years, with a large number of varieties. He dwelt at length on the immense popularity of the Kieffer pear, and reiterated his oft-repeated caution to beware of the poisonous effects of quince sap, &c. He gave a list of thirty varieties which he would recommend for the amateur, and said it was a good plan for a beginner to consult his neighbors and ascertain what varieties did best in his neighborhood.

If he were to select three as being the most delicious pears to eat, he would name Bell Lucrative, Seckel and Lawrence. For market they were not attractive enough in appearance to bring high prices. *Size*

and *beauty* are the two *essential* points to make fruit sell well. It must please the eye, or purchasers will not buy.

The three most desirable pears to plant in New Jersey for profit—having regard to all the circumstances that enter into the combination necessary to profit, viz., location, soil and climate, health, vigor, productiveness, early and regular bearing—from his present knowledge and limited experience, he would recommend Lawson, Bartlett and Kieffer.

Mr. Caywood.—The idea set forth in the paper that pear wood became diseased from growing on quince is new to me, and I have been engaged in horticulture for the past fifty years. Our best authors have always said that quince does not injure pear wood. I do not wish to take exception to Mr. Parry's position, but I have propagated pear on quince all my life, and I do not think his statement is true.

Mr. Quinn.—I think we should express our individual opinions on this matter. I have devoted some years to pear culture, and consider the first requisite in this State is to plant standards. I should purchase standards in preference to getting dwarfs for nothing. The soil is important. It should be fairly rich, capable of producing 150 bushels of potatoes per acre. The best kinds, in his judgment, were Bartlett, Clairgeau and D'Anjou. He had not changed his opinion of the Kieffer, formed five years ago. It was a pear of inferior quality, and in ten years it will be necessary to present a chromo with every tree sold. They are all we could ask for in size, beauty, or color, but in eating one with my eyes shut I could not tell whether it was a pear or a potato.

Mr. Wilcox had eaten them when they were no better than a turnip. There is a condition in which they are good, but not the best. They should be eaten at maturity. Before they are soft they are not very palatable.

Mr. Repp.—About twelve years ago I set out a number of pear trees, eleven hundred, mostly dwarf Duchesse, following the advice of Mr. Quinn in his book. I have manured the ground very highly, given good cultivation, and it is said I have a fine pear orchard. I received \$1.50 per basket for my Duchesse. I set out more Duchesses a year ago, and if planting another orchard on the same land I should plant Duchesse. I had specimens weighing twenty to twenty-eight ounces, twenty-eight to thirty making a basket. Out of seven or eight hundred bearing trees only one has blighted.

Mr. Moon, of Pennsylvania, living within a mile of Trenton, had experience with pear orchards planted twenty-five or thirty years ago, with some fifty varieties popular at that time, and my experience has been that one of the most profitable pears is one not yet mentioned—the Rutter. I would plant Giffard for early, and the Bartlett, Rutter and Kieffer to follow. Previous to this year I have been dubious in my opinion of the Kieffer. I believe its merits have been overstated and its deficiencies overestimated. It is very variable with seasons, soil, climate and situation. I never saw a good one on our farm till this year, when we had some fine, large, good-flavored pears, which kept till the middle of October. As to profit, I think any pear as large and beautiful as the Kieffer cannot fail to be profitable, but I do not think it will continue to sell at \$1.50 per basket. The large number of trees planted would bring it into competition with many others. The quality of a pear does not make its success in the market. Pears used only for cooking are profitable only by reason of their productiveness. Its merits as a cooking pear places it second to the Sand pear and better than the common Choke pear.

Mr. Ward named for profit, Giffard, Clapp, Bartlett, Boussock, Seckel, Sheldon, Clairgeau, D'Anjou and Dana's Hovey.

Mr. Collins named Comet, Bartlett, Kieffer and D'Anjou. His opinion was that quince sap did not hurt pear wood.

Mr. Burt had 25 baskets of Kieffers on top-grafted trees, which he sold at \$1 per basket, while his Lawrence sold at 50 cents per basket. He could grow the Kieffer more profitably at 25 cents a basket than the Lawrence at a dollar.

President Baker received a sample of Mr. Burt's Kieffers grown on a Diel tree and found them very good, the first really good Kieffers he had ever tasted.

Following came the President's address.

The next paper was on the habit of growth and effect of the tops on the roots of fruit trees, by J. D. Cole, Deerfield, N. J.

Paper accepted and ordered on file.

Mr. Minch.—I have no fault to find with the work of the Experiment Station so far as it has gone. I only said they should give us some further information in regard to the feeding capacity of plants. I did not say that the Station said that marl was worth eight dollars a ton. I said that the analysis showed it contained a certain amount of potash, and if the market value of potash was correct we naturally conclude the

marl would be worth the amount stated, but when we consider that a large part of the potash is not available, it reduces the value at once. I would ask Prof. Cook if the potash in kainit was sulphate, as claimed by the German chemists, or muriate as claimed by Americans.

Prof. Cook replied that no one could tell, as the elements of both are in the kainit, and certain conditions may bring out one or the other. This is illustrated by sea water, from which glauber salts are precipitated at a low temperature, and epsom salts at a high temperature.

Mr. R. W. Smith, of Elmer, Salem county, N. J., then read a paper on "Growing and Storing Celery for Family Use."

At the evening session the question box was opened and a few of the subjects presented were:

What is the most profitable early grape for market that will be out of the way before the Concord comes in?

Mr. Augur mentioned Moore's Early and Worden.

Mr. Idell said no grape can reach the New York market before the Concord.

What is the best selection of fruit trees on a small plot for market; soil heavy loam, with gravel subsoil?

Mr. Pearson named Red Astrachan apple.

Mr. Smith.—The Kieffer pear.

Mr. Caywood.—The Comet pear.

What is the difference between an apple and a pippin?

Mr. Caywood.—The term pippin is applied to a crisp and breaking apple.

Mr. Idell did not think that would apply to all apples called pippins.

Mr. Minch.—It had never been decided and never would be.

How can a good-flavored Kieffer be known?

Some one replied by eating it.

Mr. Jones said Mr. Rogers had some sent to him as typical pears of this kind, and with one exception we could not eat them; that one was pretty fair. If I was hungry I could eat it. He gave me two, which I took home and kept till Christmas, when I cut and divided them among some friends, only one of whom could eat them.

Mr. Smith said he had eaten Kieffers grown in South Jersey that were very good, and did not know of any one who had eaten a South Jersey Kieffer who did not pronounce it of fair quality. I never saw one grown in North Jersey that was fit to eat.

The Secretary had, perhaps, been accused of being as unfriendly to this pear as any one. Mr. Baker sent him some of Mr. Burt's Kieffers, and among them was one or two that he could call good; decidedly the only good ones he had ever tasted.

Mr. Rogers.—The Kieffers I received from Mr. Hansell contained half a dozen or so that were good, and they were the best Kieffers I have ever eaten.

Mr. Pearson said he wrote to Mr. Fuller this fall that he was agreeably disappointed in the quality of the Kieffers, as grown on his place the past season, and Mr. Fuller replied that he also had found them better than he had supposed.

President Baker was surprised at the quality of Mr. Burt's Kieffers; he pronounced them fine, melting and juicy.

Mr. Van Doren had found those of his own growth very fine; picked when green and put in a dark room, they were much improved.

Mr. Whitehead thought we could not ripen them as well in North as in South Jersey. By early picking and house-ripening we would probably get rid of the grittiness, and thought it would be a profitable market pear.

Mr. Caywood's experience was, it was a poor pear; thinks he is too far north.

Mr. Augur.—From our experience we do not recommend it to our patrons. We have a number of trees which I do not care to have grafted to anything else; by judicious thinning and house-ripening I think I could grow a pear of fair quality. I do not admire it as a table pear. We have had them canned, however, and they were pronounced excellent; one of my sons thinks he could learn to like them.

Mr. Parry said it was not only more talked about, but planted more largely than any other. It was planted by the thousand where others were by the dozen.

Mr. Jones.—As apropos to this question, I find this item in *Orchard and Garden*:

A STORM THAT HAILS FROM OHIO.

George W. Campbell, of Ohio, writes as follows: "The Kieffer blights worse than anything else I have grown, and it is as tender in winter as a peach tree. Last winter killed them all and I am glad of it; I would not give the thing room if anybody would plant me a

tree for nothing. There will be wailing and profanity among the victims who have invested in the Kieffer for years to come."

On this the editor comments as follows: "In our tenderness of heart and with profound pity, we can only exclaim, Poor, poor Kieffer!"

The Secretary next read a paper on "Summer Decoration of Shaded Grounds," by William F. Bassett, of Hammonton, N. J.

Then followed a paper on "The Progressive Chrysanthemum," by John Thorpe, of Queens, L. I.

Papers received and referred.

The report of the Vegetable Committee, Dr. Ward, Chairman, was received and ordered on file.

The programme being resumed, the Secretary read a paper on "Grape Rot," by Isaac Welch, of Camden, N. J., followed by a paper upon the same subject by Mr. A. W. Pearson, of Vineland.

Papers received, and referred to Committee for publication.

DISCUSSION.

The Secretary.—These are the most insidious and difficult troubles the grape grower has to contend with; you may have the most flattering prospects through the season, almost up to the ripening of the grape, till the prize is almost within your grasp, and still lose it through these agencies.

Mr. Pearson.—Mr. Scribner, of the Agricultural Department, says he has tried sulphur for mildew, and it had no effect. This seems to show that our mildew differs from the European species.

Prof. Arthur.—I want to say a word in reference to the methods employed by the author of this paper, he having left a portion of the vines for comparison. So far as this paper goes it accords with all that science knows of this disease. But I have made no experiments in this line, yet it can be said, from what we know of the character and habits of fungi, that to gather the diseased berries and destroy them as soon as they appear is probably the fundamental method of fighting the disease. The spores do not hold their germinating power for a long time, but they produce enormously; we know of no way of dispersing them. If you cannot destroy these spores you can check them. Suppression is probably the best remedy. I speak of the *Phoma*. An application externally will have but little effect.

The Secretary said, respecting Mr. Pearson's treatment, he had mulched his vines, by which he thought he obtained the same condition of keeping down the spores that Mr. Pearson did by covering with a plow, yet he did not secure exemption from rot. Prof. Caldwell, of New York, stated at the Winter meeting of the Western New York Horticultural Society, last year, that soaking the stakes in a solution of sulphate of copper had been found a remedy or preventive of rot in France; a simple remedy, if it should prove one, but he had not tried it. The *Rural New Yorker* last season published a remedy—a solution of sulphur and lime—which he did give a thorough trial, he believes, and it had no effect whatever, as he could see.

Mr. Augur thought the paper a valuable and suggestive one. One thing to be learned from it was that when we find anything that promised good results we should have unity of action. One vineyard neglected in a locality might infect a whole community.

Mr. Collins asked if mulching was beneficial, or otherwise?

Mr. Caywood thought it favored development of rot; found clean culture and no stable manure gave best results. Bone dust is not good, unless very fine, as it operates on the growth of this fungus as vegetable matter does. He used wood ashes freely.

Mr. Vandevere.—I tried sulphur on one vineyard, none on the other; the former rotted badly, the latter not at all; used twenty-five tons of marl on both, cultivated two or three times. Those I pruned and thinned the most rotted the worst.

Mr. Goldsmith asked if he understood the author of one of the papers to say he had seen no white grapes affected with *Phoma Uvicola*?

The Secretary.—Yes; but no white grape was exempt, as far as he knew.

Mr. Goldsmith.—That is my experience.

Mr. Pearson said the most successful young vineyard that he had seen in Vineland was planted as follows: Holes were dug about three and a half feet diameter and three and a half feet deep. The vines, one year old, three bud-rooted cuttings, were planted at one side of the bottom of these holes, and the roots covered with about six inches of soil, mixed with a few handfuls of bone dust. As the vine grew, it was trained up towards the top of the pit, and when growth of weeds, etc., had formed a mat upon the soil covering the vine roots, another layer of six inches of soil was filled in. This process was

repeated at intervals until by autumn the holes were filled to the general level. These vines made vigorous growth and this season carried an enormous crop of fruit, resisting the influence of severe drought from which other vineyards in the locality suffered.

Mr. Vandevere thought the roots of the vine should be near the surface.

Mr. Pearson.—In Italy they plant deep; a crowbar being used to make the holes, and the cuttings, three to four feet in length, are inserted down to the upper bud, where the vine is purposed to stand. An Italian vine dresser, in Vineland, imported last year 1,500 cuttings of the White Malaga grape, all cut about this length, and has planted them thus in Jersey sands. It is the general opinion among our Italian settlers that vines should be deeply rooted.

The next subject presented was by Prof. J. C. Arthur, of the New York Experiment Station, on "Pear Blight, its Cause and Prevention."

Mr. Van Riper asked: How can you prevent too rapid growth in the spring?

Answer.—That is a practical question, and as you are all practical fruit growers, and I am only a scientific man, of course you know how to do that better than I.

Mr. Ward.—You said bacteria would enter the pores of the wood and not be visible to the eye for several weeks. The state of the case is only revealed by a climatic change, which causes the leaves to blacken and shows that blight exists in the tree. Is there any means of ascertaining before that period arrives that bacteria have affected the tree? Is there any other way of learning that bacteria are in the fruit, except by the milky juice; and can the bacteria go from the fruit to the twig? If we knew certain fruit was affected we could remove it.

Answer.—It is rare that the fruit will be affected. It is, therefore, not worth while to pay any attention to that. The fruit will shrivel or turn brown, beginning at the spot where an insect or an accident has first permitted the germs to enter. I have only found two or three affected fruit in a season. As to some way to detect the disease before it has gone so far as to blacken the leaves, I think it is practically impossible to do it. We can do many things theoretically that practically would be difficult, which is illustrated by my own experience. I was anxious to see the first indications of the disease last

spring, and looked for it very carefully. The first I found of it was, however, in a hawthorn tree, about half a mile from the Station. I put my sample under the microscope and satisfied myself that it was pear blight. Then I went to the orchard and found one-third of the trees affected to some extent. I had previously overlooked them because the disease was very inconspicuous, and I had felt no certainty of finding it.

Mr. Jenkins.—It has been said that not every theory has been corroborated by experience. I believe that bacteria are the cause of pear blight. It has also been said that the Le Conte pear does not blight, yet some years ago I bought 600 trees in Georgia, and told the nurseryman that I did not want any pears grafted on quince stock, and he agreed that none should be sent me. The second year I went to my farm and to my surprise found three of the trees blighted—almost dead. I was discouraged. I made up my mind I would publish an article running down the Le Conte pear. But I began to look about the orchard and found a quince twig growing near one of these trees, the root of which was attached to the tree. I looked about carefully and found quince shoots on the other blighted trees, and came to the conclusion that the Le Conte pear should not be grafted on quince.

At a meeting like this, an old gentleman said his Le Conte pears were all blighted. In questioning him we found that the oak trees in the vicinity had blighted also. So we decided that the dry weather did it. If planting grapes four feet deep kept off the blight, and these trees were blighted by dry weather, I would like to ask Prof. Arthur how he reconciles this with his theory.

Answer.—I do not think I can explain either case without having made an examination. As to the case of the oak trees, judging from my experience, I do not think oaks would suffer from pear blight; because even the peach tree, which is much more closely related to the pear than the oak, cannot be made to take the pear blight, nor can grapes or any small fruits. The bacteria, in fact, will not grow in them. I think both the oak and the pear trees might have died from something else than genuine pear blight.

I know of no reason why the Le Conte pear should blight on quince stock and not under other circumstances. No pear is blight proof. All can take the disease, although some may not be much injured by it.

Mr. Minch.—Prof. Arthur says he finds this bacterium uniform,

and the blight it produces also uniform. Has he examined the diseases that closely resemble this, and yet are not the same?

Answer.—Of course anything that kills the leaf and shoot produces the same general appearance as pear blight. There will, however, be no exudation of gummy substance, and no peculiar odor, which latter some of you can detect better than I can. A certain insect is called the pear-blight beetle, because it kills the limbs and produces the appearance of blight.

Mr. Caywood.—I would ask Prof. Arthur if he does not think that blight will not originate more often from decomposing matter than where this matter does not exist? I put some manure on a row of black-caps between two rows of pear trees. These two rows of pear trees, without exception, were killed with blight, and no other.

Mr. Ward.—In your observations, have you noticed on some varieties of pear what we commonly call leaf-blight? In some varieties all the leaves turn black in a few days, often in one day. Is that identical with pear blight, or produced by bacteria, the same as that affecting the stem and bark of the tree, and would it injure the tree aside from denuding it of its leaves? They die suddenly and drop to the ground, and yet the tree itself seems healthy, and there are no ill effects next year.

Answer.—I have examined cases like this, as it occurs in our own orchard. I find that it is not due to bacteria, and is not connected in any way with pear blight. I cannot find its cause. Fungi are often present, but not always. I do not see that it does any special harm to the body of the tree.

Mr. Augur.—In a nursery I have seen hundreds and perhaps thousands of trees pulled up blighted. Would you not advise the thorough destruction of all branches and trees that are removed in consequence of blight?

Answer.—I would recommend it as a safeguard. Not that I am quite certain that you would have any remarkable results by destroying the diseased portions. It is reasonable to think, however, that it is to some extent a means of checking the disease.

Mr. Parry.—Amid the multitude of mystery that surrounds this matter we find it difficult to decide what is truth. We have had experience in the spread of blight along the roots of pear trees. The Le Conte is a vigorous grower on its own or other pear roots, but on

quince roots it will not grow large enough to bear fruit. We have tried them by the hundred, and have never raised a Le Conte on quince stock. Most of them turn black and die in the third year.

Mr. Caywood.—Not a quarter of the pears will succeed on quince, but the finest Kieffers we have are on quince stock.

Mr. Minch.—For twenty years I have been investigating the subject of the pear blight. We planted a lot of standard pears, manured highly, cultivated the ground thoroughly, and they grew luxuriantly; but they all died of blight. We planted some more and let them alone. The ground was covered with grass, and the less care we gave the trees the less blight we had. It seemed as if the bearing of the fruit drew all the poison and bacteria, etc., out of the tree.

Last spring we had a tree top grafted with the Vicar of Winkfield. Early in the season I noticed that the upper part of the tree looked dark. I cut a bit from the tree and found the whole wood black; the whole Duchesse stock was black, but the Vicar did not seem to mind it at all, and blossomed profusely; but it soon drooped and died, and now looks like a genuine case of blight. The leaves are hanging on yet.

Thirty years ago we had a heavy snow, followed by severe cold. Some of our Bartletts had thrown up suckers four or five feet high. The smaller ones were killed outright above the snow line. Some of the stronger ones were only partially killed. These began to send out buds and shoots; but finally all died down to the snow line, but none below that line. After that many people found that if you induce a rapid growth the first two or three years you are very apt to have blight, but you can then force them and have fine fruit.

Answer.—The case in which the lower part of the tree was brown and the bark was still soft, but dead, is an instance very similar to what has occurred in my own experience. It may not have been blight in that case, but I have known similar cases in which it certainly was blight. In such cases the upper part of the tree may grow a whole year, or even put out leaves the second season, before being entirely killed.

Address accepted, with the thanks of the Society, and referred to the Executive Committee for publication.

Following is a very important paper which we give in full, by C. W. Idell, of Hoboken, N. J., on

A NATIONAL AND UNIFORM SYSTEM OF WEIGHTS AND MEASURES.

MR. PRESIDENT AND GENTLEMEN—With our constantly and rapidly increasing interstate commerce in fruits and produce of the soil, the necessity of having a National standard of weights and measures to be enforced throughout the Union becomes more and more apparent. In the first place, we need a standard barrel and half barrel for measuring and shipping apples, pears, potatoes, onions, &c., in ; for, as it is now, a person contracting for a certain number of barrels of fruit or produce may receive a very different quantity from what he expected and paid for.

It is also quite common to ship potatoes, onions, &c., in bulk or bags, and on arrival in market to sell them by the barrel. Let a standard of weights be fixed for these articles for a barrel and bushel.

A miller is bound, by law, to give 196 pounds of flour for a barrel. Why should not the growers and dealers in fruits and produce be compelled to give a stated quantity also ?

The shipping of fruits and vegetables in boxes and crates has become a custom which has a tendency to foster fraud on account of the absence of all law regulating their size, and I know of no better way to control this point than to confine all scales of this order to the National standard of cubic inches to the bushel, and the sixteen and eight-quart fractions, with the exception of oranges and lemons. Two varieties of berries shipped in boxes which are cursed with this cheating process more than any others are the cranberry and huckleberry.

In Massachusetts a law was prepared for the benefit of the cranberry growers, defining a bushel of this fruit to be 32 quarts level measure, and a barrel must contain 100 quarts level measure. No dimensions were given for a box or barrel to contain this quantity, and the result is that we find there is put on the market four sized boxes, each claiming to contain the legal quantity ; yet they differ in capacity 198 cubic inches, or say three quarts.

The New Jersey Legislature passed a law, defining the number of cubic inches a box or barrel must contain of these berries, but it had no force outside of the State, so the growers could ship in any sized box they chose. A New Jersey standard bushel box contains 2,211 cubic inches, which is a trifle more than the United States standard, which is $2,150\frac{42}{100}$.

The heads of these boxes are twelve inches long, eight and three-

fourths inches wide, and the sides twenty-two inches in the clear. A difference of one-half an inch in the width of these heads will make a difference of two quarts in the quantity of fruit; yet but few purchasers would detect the difference in size in the haste of buying them; so one can see the necessity of compelling all shippers to give the same measure.

In the early history of marketing huckleberries, a successful effort was made to use one-sized box, containing 16 quarts, to ship them in and sell on arrival without again measuring them. For years this plan gave satisfaction to both shippers and purchasers, but in time shippers began to cut down the size of the boxes, until now it is said there is no line of fruit sent to our market the sale of which is carried on so dishonestly as this, for many of the modern boxes do not contain more than eight quarts, and I have detected a few that had only six quarts in them.

There seems to be a radical defect in our wooden measures, for we find that some States ignore them to a certain extent, by passing laws that a bushel of certain grain must weigh a given number of pounds.

In this instance the size of the measure is ignored and weight substituted. Now, if weight is to be the standard, why not give a National weight instead of States giving separate and different ones?

The United States determines the number of cubic inches to make a measure known as a bushel, but States ignore it. Does this disposition to override the National laws develop patriotism or only selfishness? And if a State has the right to ignore the National law of measure, has it not the right to ignore all others?

The selling of our native nuts should also be confined to weights, instead of measures or weights, as may be agreed upon.

I have made a single exception to boxes in favor of those used by the Florida fruit growers to pack their oranges and lemons in. These growers deserve honorable mention, for they mark the number the box contains on one end, so the purchaser can see at once how many he buys.

The entire system of making baskets for the shipping of fruit in, needs a thorough revision, and the passing of a stringent law, governing their size, which should be confined to the sixteen and eight-quarts level legal measure, with the exception of berry baskets, which should be confined to the legal quart, pint, and half-pint; then we will have all the sizes we need, for trade or profit.

Suppose one buys a barrel of apples, potatoes or onions of a dealer,

expecting to receive one of the flour barrel size, but instead receives one that contains only two and a quarter bushels, instead of two and three-quarters bushels, what redress has he at law? None. He bought and received just what he paid for—a barrel; that means nothing, however, but a number of staves bound together by hoops and having a head at the ends.

The same can be said when one buys a basket of any of these articles; the dealer has the privilege of cheating the consumer all he can; and how thoroughly the sidewalk dealers and “licensed venders” understand this when they offer the skin quart basket that contains but two-thirds of a quart, or the round one-third of a quart cup for a pint, and the reverse end for a one-half pint.

When a consumer buys a barrel of flour and finds it deficient in weight, he can get immediate redress through the law. Why should not he be entitled to equal redress when he is defrauded in purchasing fruits or produce? But he is not.

The commission merchant who is desirous of protecting a grower who ships honest packages cannot always do it without suffering loss, for, if one sends him a box of berries containing thirty-two quarts, and a neighbor one that contains only twenty-eight quarts, he is expected to aid the one who cheats in measure by returning him the same price for twenty-eight quarts that the other received for thirty-two quarts. If you do not he will not make you another shipment, but try another dealer who will.

The retailers who wish to deal honestly are compelled to meet in competition dishonest men who cheat in every form they can to make money, and the entire trade in fruits and produce is open to their operations.

There is hardly a subject that deserves more careful consideration than this one, the establishment of standard measures. For the want of such laws our farmers have been defrauded of millions of dollars, and it is time this subject should be agitated by all Horticultural Societies throughout the land.

Let our Society take the lead in this matter.

Paper received and referred to Executive Committee.

The paper by J. T. Lovett, of Little Silver, N. J., on “The Causes of the Depression in Prices of Horticultural Products, and How They can be Improved so as to Afford the Producer a Fair Profit,” was received, and referred to the Executive Committee.

Mr. Whitehead.—Twenty years ago I concluded I would be a fruit-grower, and believed all I read in the papers was gospel truth. All this time I have lived on my own farm and planted apple and pear trees and other fruits, in accordance with the books and papers, and my own observation. I have been content to labor and to wait, because I was told the fruit business could never be overdone. I have since learned that these statements were often written by interested parties who had plants and trees to sell, and I think the business is overdone. I have fine crops and take care of them, but I find the dollars do not come in as I was told they would. I believe the book "Ten Acres Enough" has ruined more people and broken up more comfortable homes than any other book ever published. Our business is too much advertised in a commercial point of view. The *American Garden*, in a late issue, contains a flaming advertisement headed "\$500 per acre clear profit from flowers, vegetables and fruits." For one person doing this, ninety-nine will fail.

You might as well claim that \$200,000,000 could be made in railroads because Vanderbilt made it. What should we think of the shoemaker or tailor who would advertise \$5,000 a year could be made out of the shoemaking or tailoring business? I think money can be made in our business, with care and attention, but it has been too much advertised; it is overdone.

Mr. Lovett.—This gentleman says people come out to the country misled by "Ten Acres Enough." I say they were bankrupt before they came, and it was their own fault. He would place an embargo on the whole trade. He virtually says: "Plant no more trees; let me have all the profit."

President Baker.—I have a question here so apropos to this subject I will read it now. I notice that Dr. Loring, ex-Commissioner of Agriculture, has been recommending farmers in New England to cut down their orchards of pears and apples, and that even so conservative a writer as A. W. Cheever, of the *New England Farmer*, has been advising his readers to go slow on pear culture. This would seem to indicate that fruit culture in general, and pear culture in particular, was a failure in New England. Are New Jersey horticulturists of the opinion that fruit-growing is overdone in this country?

Mr. Whitehead.—I happen to have this very article of Mr. Cheever's in my pocket, which it may be well to have appear in our report, in connection with this discussion.

Mr. Grant.—I was one who read "Ten Acres Enough" with a great deal of interest. There was but one man who wrote it, as there was but one Vanderbilt. Mr. Morris, the author of "Ten Acres Enough," was overtaxed with the cares of commercial life in Philadelphia, and selected a little country home, but did not expect to make a living on it. He planted blackberries and peaches, and sold them at a profit, and made a profit on his book; and there are many beautiful homes along our water fronts where people raise their own products—all the result of this book. But a man must not expect to make a living for himself and family on ten acres.

Mr. Blackwell.—The best market, in this city, for apples, twenty-five years ago, was forty-four cents per bushel; now it is fifty cents. A few days ago good apples would bring two dollars per barrel in Philadelphia. If that is not a good price I would like to know what is.

Mr. Repp.—I think one of the best remedies is to keep the poor fruit out of the market by growing it better.

Mr. Van Riper.—I think too many make a specialty of one thing. The man who produces a number of crops will be likely to succeed the best. An acre of apples will produce more money value than an acre of grain, but even apples will sometimes fail.

Mr. Dye.—General farming has been spoken of as profitable, but produce of all kinds is very low; we must take our chances.

Mr. Minch.—I have sixty-five acres in apples, and only regret I have not sixty-five acres more. This idea that fruit-growing is overdone is a mistake. They expect too much profit. I can make more money raising apples at fifteen cents a basket, of two and one-half pecks, than I can in any other way. I am planting apples all the time; the secret of small fruit growing is to bring the producer and consumer together. I went to New York to see what the cause of low prices were, and found strawberries selling at three cents per quart. I went to Newark and found them selling at fifteen cents.

Mr. Whitehead asked what the grower's profit was on those three-cent berries; he probably paid two cents to have them picked, the freight, baskets and commission had to come out of the other cent.

Mr. Minch.—I only mention this to show that if we could bring the producer and consumer together, both would be benefited.

Mr. Whitehead.—Thousands of bushels of apples were allowed to go to waste in Connecticut because there was no market for them.

Mr. Collins.—Fruit growers pay millions for the protection of other industries, while foreign fruits are imported free to compete with our products. I should like to see a duty put on foreign fruits that would protect us from them; bananas compete seriously with our strawberries.

Mr. Hale.—Two years ago, owing to a late frost, our crop was short, and to save us from loss we endeavored to get a good price for them, but the dealers said they would not bring more than ordinary, because of the foreign fruits in the market.

Mr. Augur.—It has been stated that the fruit consumption of our country should be increased tenfold; I believe this. The principal market I supply is Meriden, Conn., and I am inclined to think a little larger production would flood it. What shall we do about it? The population is 28,000, mostly mechanics. The fruit consumption ought to be several times what it is now. There are 130 liquor saloons, and all supported from the earnings of the people. In a store, one day, I heard a scantily clad child ask for a cent's worth of thread. How much do you suppose that family spent for fruit? The earnings of the people are going for that which is not bread. Instead of supplying them with whiskey and beer, we ought to stop this and have these earnings go for the necessities of life. I expected the people I should meet here would be thinking people, and I have found it so. We have good homes, we live well and have fruit the year round; but there are thousands of families who have nothing of the kind, and they ought to have it, and we should use our influence so they could have the comforts we enjoy.

The Secretary.—There are two sides to this question; we hear more of the successes than we do of the failures, but the successes are not as a rule boomed by the individuals themselves, but by those who use them as a means to induce others to engage in the business, that they may profit by their adventures. Now if fruit-growing was such a profitable business, as some parties pretend it is, would it not seem policy and good judgment on their part to stick to it instead of urging all creation to enter into competition with them and divide the profits? Does it not look a little as though they looked for their profits from other sources than their own fruit-growing? It is generally the mixed husbandry, in connection with fruit-growing, that furnishes the living and support of the family, while the whole receipts from the fruits are counted as net gain. This complaint of unprofitableness is by no

means local, it is universal. In Ohio hundreds of bushels of strawberries were sold on the streets the past season for four and six cents per quart, the latter price for Cumberland and Sharpless; 500,000 quarts arrived in Philadelphia in one day—market glutted; 60,000 quarts sent into the city of Albany, N. Y., within a radius of ten miles, June 23d, sold at three to six cents a quart. You have just heard of the Connecticut and New York markets; the same condition of things exists in most of our large cities. Is it any wonder growers fail to find the profits at such figures? Even Parker Earle, of Illinois, who is sometimes called the Strawberry King, who from the magnitude of his operations ought to find an aggregate profit if any one can, confesses in a letter to the editor of the *Country Gentleman* that if it were not for his investments in the business he would not go into it, with his present knowledge, for the profits promised.

Following the discussion was a paper read by Franklin Dye, of Trenton, on "Experiment in Growing Potatoes." Paper accepted and referred to Executive Committee.

The next topic treated was "The Best Methods of Retarding the Ripening of Fruits by the aid of Ice."

Mr. Wm. H. Goldsmith, of Newark, introduced the subject with a brief paper.

Mr. W. R. Ward, of Newark, then read a paper on "The Preservation of Fruit by the Use of Ice."

Mr. Goldsmith, in reply to an inquiry, stated that a temperature of thirty-five degrees would do for pears, and thirty-five to forty degrees for grapes. If the stems of grapes were free from mildew, they kept well; otherwise, not. A lot put in a patent refrigerator kept no better than those in his ice house.

Mr. Collins thought the house should be constructed so the ice could be put in as it was cut, and save handling.

President-elect Pearson was then invited to come forward, and was introduced by President Baker, who hoped the Society, under his administration, would be even more prosperous than during his own.

President Pearson thanked him for his good wishes, and the Society for the compliment in selecting him as their presiding officer, and asked their indulgence. He would try to do the best he could.

Mr. Jones moved a vote of thanks to our retiring President, Theo. F. Baker, "for the very able and efficient manner in which he has presided over our deliberations for the past two years, and for the very

courteous and affable manner with which he has treated all the members, assuring him that we will ever keep his memory green."

The Secretary calling for a vote on the resolution, it was unanimously adopted.

Mr. Ward.—And now, Mr. President, allow me to present you, in behalf of a friend of the Society, this bunch of beautiful roses. Please accept their beauty and fragrance as emblematic of our love and esteem for you.

President Baker accepted these kind expressions of his associates with heart-felt thanks, and expressed his cordial good wishes for the Society and its individual members.

Mr. Whitehead.—As there seems a disposition among some to leave, I wish to offer the following resolution :

Resolved, That our thanks are due and are hereby tendered to the Mercer County Board of Agriculture for their kind attention and efficient efforts to make this meeting a success; to the press for favorable notices; to exhibitors, and all who have in any way contributed to this end.

Adopted unanimously.

The question of future meetings was called, but as many were leaving there was no disposition to discuss it, and on motion it was left to the Executive Committee.

Mr. Dye remarked that the Mercer County Board of Agriculture would be glad to have the next meeting in Trenton again.

After which the meeting adjourned *sine die*.

The above abstracts from the Eleventh Annual Proceedings of the New Jersey State Horticultural Society comprise but a small portion of the entire report. The valuable and important papers read, with the discussions, can be found in full in the eleventh volume of the Transactions of the New Jersey State Horticultural Society, which can be obtained by addressing E. Williams, Secretary of the Society, Montclair, New Jersey, enclosing one dollar, thereby becoming a member of the Society.

CRANBERRY GROWERS' ASSOCIATION.

CRANBERRY GROWERS' ASSOCIATION.

The sixteenth annual convention of this Association was held at the Court House, Toms River, N. J., August 28th, 1885.

The President, Dr. J. H. Brakeley, presided.

The reading of the minutes were dispensed with, the same having been printed and sent to all members. The minutes were approved as printed.

The Secretary reported twelve names added to the roll of membership and nine had been dropped by request, or for non-payment of dues.

The Treasurer made the following report for six months ending August 25th, 1885:

Cash received for dues and membership.....	\$88 00
Balance from last report.....	58 18
Total.....	<u>\$146 18</u>
Disbursements for printing and mailing reports... ..	141 39
Balance.....	<u>\$4 79</u>

The President, Dr. Brakeley, read an interesting and instructive paper on the vitality of the vine worm (*Auchylopera vacciniana*), and the berry or fruit worm, with description, habits and effective methods for their destruction. The paper is printed in full in the official proceedings of the Association.

The following, on the subject of standard measure, is from the Statistician's report at this meeting:

PACKAGES.

The Massachusetts law requires cranberry crates to hold 32 quarts, and barrels 100 quarts, level measure.

Reference was made in my last annual report to different sizes shipped to New York from Massachusetts under this law. It is sup-

posed that 32 quarts, level measure, means a United States standard bushel, which contains $2,150\frac{2}{5}$ cubic inches; but the largest Massachusetts crate found last season in New York contained only 2,112 cubic inches, and the smallest 1,914.

I am now advised that the principal crate makers in that State have under this law concluded to adopt the size $22\frac{1}{8} \times 12 \times 7\frac{1}{2}$ inches, inside measure, which gives $1,991\frac{1}{4}$ cubic inches, or, as compared with the United States standard bushel, $29\frac{6.3}{100}$ quarts, while the New Jersey standard crate, containing 2,211 cubic inches, would by the same rule hold $32\frac{9}{10}$ quarts.

I am quite unable to see by what reasoning our Yankee friends can make a crate of the cubic capacity of only $29\frac{6.3}{100}$ quarts satisfy the recent law of their own devising, which requires the crate to hold 32 quarts, level measure.

I think our Massachusetts friends made at least two mistakes in the provisions of their law, viz.: in not making the crate to hold one-third of a barrel, and in not prescribing the exact dimensions required.

Practically they are making another mistake in constructing and using crates that hold nearly $2\frac{1}{2}$ quarts less than their law prescribes, and $3\frac{1}{4}$ quarts less than the New Jersey standard crate. The New Jersey standard crate, which is practically one-third of the Massachusetts legal barrel, is the measure recognized and sought for by all large dealers, and it has been a great promoter of equity and convenience. That its merits do not of their own force override and drive out the smaller crates, must be attributed to the ignorance and carelessness of retail dealers and consumers, for it cannot be supposed that they would knowingly accept the smaller measure at the price of the larger, or at a relatively higher price. The New Jersey standard crates do not conspicuously announce themselves as such. The brand, when well put on, is obscure and seldom noticed unless sought for, while many are imperfectly branded or not branded at all. This is even more strikingly and mischievously true of the undersized crates which are required by law to have their relative size conspicuously marked.

I suggest as an efficient means towards remedying these difficulties that the Association furnish to box-makers "pasters," printed in bright colors, to strikingly announce the standard size, as well as the inferior sizes, to be used instead of the old metal brand heretofore furnished for standard crates, and of the inconspicuous marks, or no marks, upon smaller crates.

All packers in standard crates must see the advantage to them of this course, and I think the Association could devise means to enforce the law upon packers in small crates.

Some such plan seems the more needful and proper on account of the small crates from Massachusetts. If New Jersey growers adhere to their long-established standard, they are certainly entitled to the benefit of the greatest possible publicity.

I am ignorant of what progress has been made by the committee charged with the duty of applying to Congress for a National standard of measure for cranberries, but I fear it may be long before the equity of uniform measure is obtained in that way. If Massachusetts and New Jersey growers would unite upon laws in their respective States practically identical, New York and Pennsylvania could hardly hesitate to enforce the same sizes, and this would practically settle the question for the Atlantic States.

ANNUAL MEETING.

The sixteenth annual meeting of the American Cranberry Growers' Association was held at Room 5, Masonic Temple, January 19th, 1886, the President, Dr. Brakeley, in the chair.

J. O. Evans was elected Secretary *pro tem*.

The minutes of the sixteenth annual convention were approved as printed.

The Treasurer's report was read, as follows :

Receipts for dues and membership since August	
25th, 1885.....	\$83 00
Receipts for <i>Bulletin</i>	69 00
Balance from last report.....	4 79
Total receipts.....	\$156 79
Paid for printing and mailing reports, &c.....	49 50
Balance in hand of Treasurer.....	\$107 29

LIABILITIES.

Unpaid bills for collecting statistics and printing <i>Bulletin</i>	
	\$183 26
Less cash in hand.....	107 29
Leaving a net deficit of.....	\$75 97

Respectfully submitted,

A. J. RIDER, *Treasurer*.

M. M. Chew and E. Z. Collings were appointed a committee to audit the Treasurer's accounts.

A communication was read from the Secretary and Treasurer, A. J. Rider, expressing his regret that he was unable to attend the meeting, on account of a funeral, and asked the Association to excuse him from further service as Secretary and Treasurer, a position which he had held for thirteen years. The membership had become large, and the work of compiling and reports and attending to necessary correspondence had become burdensome to one who already had too much to do.

The communication was laid on the table.

Dr. Brakeley, President, gave notice of the death of Second Vice-President, Dr. E. S. Merriman.

On motion, the President was appointed a committee of one to express to the widow and family of the deceased the condolence and sympathy of members of this Association.

The Auditing Committee reported that they had examined the accounts of the Treasurer and found them correct. Committee discharged.

Messrs. Quicksall and Satterthwaite were appointed a committee to nominate officers. They nominated the following, who were duly elected :

President.—Dr. J. H. Brakeley, Bordentown, N. J.

1st Vice-President.—Hon. Theo. Budd, Pemberton, N. J.

2d Vice-President.—C. L. Holman, Lakewood, N. J.

Secretary and Treasurer.—A. J. Rider, Trenton, N. J.

Statistician.—N. R. French, Elizabeth, N. J.

Representative in State Board of Agriculture.—Dr. J. H. Brakeley, Bordentown, N. J.

Executive Committee.—J. H. Brakeley, A. J. Rider, Theo. Budd, N. R. French.

Corresponding Secretaries for New Jersey.—M. M. Chew, Williamstown, N. J. ; Chas. L. Holman, Lakewood, N. J. ; Dr. L. W. Brown, Vineland, N. J. ; Alfred Satterthwaite, Crosswicks, N. J. ; William Quicksall, Hornerstown, N. J.

Corresponding Secretaries for Massachusetts.—Isaac Alger, Attleboro, Mass. ; O. M. Holmes, Box 5223, Boston, Mass.

Corresponding Secretary for Connecticut.—D. C. Spencer, Old Saybrook, Conn.

Corresponding Secretary for Rhode Island.—A. C. Sampson, 15 Weybosset street, Providence, R. I.

Corresponding Secretary for Long Island.—Wm. Jagger, Jerico, L. I.

The President appointed the following Standing Committees:

Standard Measure.—Crane, Rider, Satterthwaite, Collings and Chew.

Foreign Trade.—French, Rider, S. H. Comings.

Scientific Investigations.—J. H. Brakeley, Dr. Goodell, Professor George H. Cook.

Insects.—J. H. Brakeley, Holman, Applegate.

The Statistician made the following report, which was adopted with the thanks of the Association :

STATISTICAL REPORT.

MR. PRESIDENT—At the convention on the 28th of August last numerous estimates of the crop on the vines, contrasted with actual crop of previous year, were summed up, with the remark that, “if numerous enough to insure a correct estimate, they would indicate a crop on the vines of more than 750,000 bushels, or 250,000 bushels more than the large crop of 1879.

After summarizing the estimates from the principal cranberry growing sections, your Statistician made a lump estimate, as follows :

	Bushels.
New Jersey.....	175,000
New England.....	225,000
Wisconsin	150,000
Other Western States.....	10,000
Total.....	560,000

Further light may now be drawn from the recorded movement of the crop, as shown by the following table from the *Bulletin* of January 2d, 1886 :

MOVEMENT OF THE CROP.

	WEEK ENDING DEC. 31.		PREVIOUS WEEK.		SINCE FIRST OF SEASON.	
	Barrels.	Crates.	Barrels.	Crates.	Barrels.	Crates.
RECEIPTS AT NEW YORK.						
New Jersey Southern Railroad		532		1,399	7	20,391
Pennsylvania Railroad.....			8	511	10	4,468
Fall River Line.....	283	29	516	106	38,599	8,967
Stonington Line.....					176	
Norwich Line.....	65		175	3	1,307	198
Long Island Railroad.....		80			753	2,303
Philadelphia & Reading Railroad....		14		227	150	7,313
Providence Line.....						
New Bedford Line.....						
Erie Railroad.....					34	
Totals.....	348	655	699	2,296	41,036	43,640
RECEIPTS AT PHILADELPHIA.						
*Penna. R. R. (Amboy Div.).....	124	1,722			775	18,067
*Camden & Atlantic Railroad.....	94	3,721			428	14,202
*West Jersey Railroad.....	24	619			306	10,484
P. & A. C. Railroad.....		185		2,475		23,400
Fall River Line via New York.....	12		40		2,649	346
Totals.....	254	6,247	40	2,475	4,158	66,499
RECEIPTS AT BOSTON.						
Old Colony Railroad.....	149	29	166	36	16,122	3,002
SHIPMENTS FROM COUNTRY STATIONS DIRECTLY WEST.						
From New Jersey.....	178	401			700	7,568
From New England.....			172		2,885	422
From Long Island.....						
Totals.....	178	401	172		3,585	7,990
† RECEIPTS AT CHICAGO.						
C., M. & St. P. R. R.....			208		49,209	953
C. & N. W. R. R.....					15,981	1,801
Totals.....			208		65,190	2,754

* Two weeks. † Week ending Dec. 30th.

From this table it appears that by calculating barrels at three bushels and crates at one bushel, the reported receipts at New York from New Jersey by the New Jersey Southern, the Penna., and the P. & R. roads, from commencement of season to December 31st, 1885,

have been 32,673 bushels, to which add, say 3,000 for receipts not reported, and we have 35,673, against 20,464 to same date in 1884 and 28,671 in 1883.

The reported receipts at Philadelphia from New Jersey by the Penna., C. & A., W. J. and P. & A. C. roads, amount to 70,680, to which add, say 5,000 for receipts not reported, and we have 75,680 bushels, against 30,656 in 1884 and 58,882 in 1883.

The reported shipments from New Jersey directly West have been 9,668, against 50,472 to same time in 1884 and 6,425 in 1883.

The movement of the New Jersey crop to December 31st, 1885, has therefore been—

	Bushels.
To New York.....	35,673
To Philadelphia.....	75,680
To the West.....	9,660
To home market, estimated.....	6,000
Total	127,021

This movement, deducted from the October estimate of the crop, indicates 109,810 bushels still in the hands of growers.

The movement of the New England crop reported and estimated has been as follows :

	Reported.	Estimated.	Total.
To New York.....	124,764	10,000	134,764
To Boston.....	51,368	10,000	61,368
To Philadelphia.....	8,293	10,000	18,293
To West direct.....	9,077	.....	9,077
To other N. E. markets, say .....	.....	.....	10,000
Total.....			233,502

which, taken from the October estimate, leaves 171,355 bushels apparently unmoved. This is proportionally as great as the apparently unmoved stock in New Jersey, and both *seem* nearly incredible.

The reported receipts at Chicago from Wisconsin amount to 198,224 bushels, which it is thought cannot exceed three-fourths of the actual movement. This would make the amount moved 264,298 bushels, and as compared with October estimate, indicates 57,881 still left in that State.

The foregoing may be condensed as follows :

From	Movement reported.	Additional movement estimated.	Total to Jan. 1st.	Oct. crop estimate.	Apparently unmoved.
New Jersey.....	113,021	14,000	127,021	236,831	109,810
New England.....	193,502	40,000	233,502	404,857	171,355
Wisconsin	198,224	66,074	264,298	322,179	57,881
Totals	504,747	120,074	624,821	963,867	339,046

From this it may be seen that the crop movement to January 1st, reported by the principal railroads carrying this fruit, is some 14,000 bushels more than the largest crop on record, while the estimated movement not thus reported is over 120,000 bushels, making the entire movement about two-thirds of the October estimated crop, and leaving about one-third still in the hands of the growers.

The October estimates have, heretofore, fairly indicated the size of the crop, and it is possible the last one is equally correct. But the amount apparently on hand staggers belief.

THE COURSE OF TRADE.

The first number of the *Bulletin* for this season was issued September 26th, and its quotation for Cape Cod Fancy, per bbl., was \$7.50 @ \$8.00.

Higher figures had previously been reached for a few of the first in market of the highest grade of Early Blacks.

Prices soon dropped to \$6.50 @ \$7.00, and, with slight fluctuations, gradually declined until \$6.00 @ \$6.50 was seldom exceeded in the last week of November.

New Jersey cranberries opened in New York nominally at about \$1.75 per crate for the best, but fine Cape Cod fruit, mostly "Early Blacks," had possession of the market, nearly to the exclusion of Jersey crates, until the end of October.

In November they were crowded upon the market, and some of the best were sold in the range of \$1.50 to \$1.70 per crate, some small sales being occasionally made at better figures, while many lots that were off in quality or filling, or in undersized crates, remained on hand, or were forced to sale at much lower figures.

In anticipation of a dull market after Thanksgiving, or from some other cause, the receipts immediately following that holiday were greatly diminished. At the same price an active home and shipping

demand occurred. Prices were advanced on fancy Cape Cod fruit about fifty cents per barrel.

Much encouragement was felt at this time, and cranberry growers, both in New Jersey and New England, made haste to take advantage of the better outlook. A flood succeeded the waning tide, and the demand simultaneously fell off. The dullness increased during the last half of December, and no revival has since occurred. Old commission merchants in New York have been so apprehensive of accumulated stock of New Jersey cranberries, that they have as diligently striven to prevent consignments as they had heretofore sought for them. In spite of this caution, many of them are now burdened with stocks much heavier than usual at this season of the year, while there are a great many Jersey cranberries scattered about the city, in the hands of dealers not heretofore conspicuous in this line of trade.

Prices have averaged in New York, from the commencement to the middle of January, very much lower than ever before, and are now at the lowest point of the season—indeed, if opportunity occurred to sell any considerable quantity, the price could scarcely stand in the way.

That low prices largely increase the consumption of cranberries is evinced by the fact that more than double the entire amount of the crop of 1884 has this season already gone to market, a large proportion of which has been sold. But it seems to be still an open question whether any reduction in price can insure the consumption of a crop apparently three times as large as the crop of 1884, and double that of the largest previous crop.

At the commencement the Fruit Growers' Trade Company looked upon this great crop and the inevitable low prices as an opportunity for a largely increased export trade. They had, several years ago, when prices were low, succeeded in exporting nearly 2,000 crates without loss, and hoped to more than double that small figure the present season.

Shipments were made to Liverpool, London, Glasgow and Birmingham.

The first reports were very favorable, and increased shipments were hurried forward, but soon there was a peremptory cable message with one word, "Stop!"

The upshot of the whole business is that about 1,200 crates seem to have glutted the entire United Kingdom, and are likely to bring loss upon the company.

At Dresden, Saxony, there are so many resident Americans that a grocer who caters for them gives us an order every fall for a small lot of cranberries and cranberry sauce. When filling this order last fall, we concluded to venture by the same ship a consignment of 25 crates to Hamburg. In due time our consignee advised that he had offered the fruit for sale, and the best bid he could get was 4s. per crate, which he declined, and sent the lot to Liverpool, where he noticed they were quoted at 10s., and where they were finally sold at 8s. The Hamburg man generously remitted the entire net proceeds without commission to himself. He favored us with information as follows: "Only small cranberries are used here, at a cost of 12s. to 15s. per cwt., and sold in large quantities, coming from Sweden and Norway and those quarters chiefly; also plenty grown here."

Apparently the persistent efforts of the last ten years to introduce cranberries abroad have had very little effect, beyond what Americans across the sea require.

The *Cranberry Bulletin* has thus far this season carried very little encouraging news to its patrons, and I am sorry to be obliged to make the tone of this report equally doleful.

Some one has said, with an air of wisdom, "that no man's life should be considered a failure until he is dead."

Let us hope that the current cranberry season will seem less a failure at the end than at present.

To deprecate a bountiful harvest seems impious, but we may well regret the inability of man to buy at remunerative rates and consume for his own best good all that is produced.

The trouble is not over-production, but under-consumption; it is the old unsolved problem of how to get the superabundant shirts and the shirtless backs together.

But I had better stop before I get into questions of political economy or the ethics of trade.

The usual continuous tables are annexed.

TABLES.

The early estimates of the cranberry crop of the country, for thirteen years, are shown in the following table in bushels:

	1872.	1873.	1874.	1875.	1876.	1877.	1878.
New England.....	40,000	105,000	105,000	75,000	65,000	164,229	125,000
New Jersey.....	100,000	110,000	90,000	110,000	90,000	152,100	60,000
Western States.....	135,000	60,000	50,000	40,000	40,000	79,500	107,769
New York.....	.....	.....	5,000	5,000	8,000	5,000	3,000
Totals.....	275,000	275,000	250,000	230,000	198,000	400,828	295,760

	1879.	1880.	1881.	1882.	1883.	1884.	1885.
New England.....	165,000	247,500	155,825	191,664	141,964	130,583	225,000
New Jersey.....	90,000	128,700	157,014	78,507	113,524	124,648	175,000
Western States.....	75,000	113,430	143,186	50,000	135,507	24,783	160,000
New York.....	3,000	3,000	5,000	2,000	.....	.....	.....
Totals.....	233,000	492,630	461,025	322,171	442,207	330,000	560,000

A table showing the opening and closing prices of New Jersey cranberries, in bushel crates, at New York, for thirteen consecutive seasons, commencing with 1870 :

1870. September.....	\$3.50 @ \$4.00	1879. September.....	\$1.75 @ \$2.00
May, '71.....	1.00 @ 1.25	May, '80.....	5.00 @ 6.00
1871. September.....	3.25 @ 4.00	1880. September.....	1.50 @ 2.00
May, '72.....	4.50 @ 5.50	May, '81.....	50 @ 1.00
1872. September.....	3.25 @ 4.00	1881. September.....	1.50 @ 2.00
May, '73.....	1.50 @ 2.00	January, '82.....	3.50 @ 4.00
1873. September.....	2.50 @ 3.00	May, '82.....	2.00 @ 3.00
April, '74.....	4.75 @ 5.00	1882. October 1st.....	2.75 @ 3.00
1874. September.....	2.75 @ 3.00	1883. January 1st.....	4.00 @ 4.50
May, '75.....	1.75 @ 2.00	April.....	2.00 @ 3.50
1875. September.....	2.00 @ 2.75	October 1st.....	2.75 @ 3.00
May, '76.....	4.75 @ 5.00	1884. January 1st.....	3.50 @ 3.75
1876. September.....	3.25 @ 3.50	April.....	5.25 @ 5.50
May, '77.....	2.00 nom.	October 1st.....	2.75 @ 3.00
1877. September.....	2.00 @ 2.50	1885. January 1st.....	4.50 @ 4.75
May, '78.....	4.00	May 1st.....	2.50 @ 2.75
1878. September.....	2.00 @ 2.25	October 1st.....	1.50 @ 1.70
May, '79.....	2.25 @ 2.50	1886. January 1st.....	1.20 @ 1.40

January 18th, 1886.

N. R. FRENCH.

On motion, the expense of obtaining from railroad and transportation companies statistics of the movement of the crop was ordered discontinued.

On motion, it was resolved to hold a special meeting of the Association on the third Tuesday in October, at such place as the Executive Committee shall select.

The following communication was read and ordered printed :

FOREIGN TRADE.

ST. JOSEPH, MICH., Jan. 11th, 1880.

Secretary New Jersey Cranberry Growers' Association:

DEAR SIR—I feel quite reluctant to present another paper to this Society, from the fact that I volunteered one a few years ago, and have but few new ideas to present at this time. But possibly some may be present at this time who were not before, or perhaps the subject may have more interest now than when cranberries were readily selling at \$10.00 to \$15.00 per barrel. So I will briefly give a few thoughts for your consideration.

This year's crop of cranberries and present prices are what I have expected for several years. And the fact is, that this year's crop, large as it has been, is not a full crop from all the cranberry-growing sections by any means, nor as large as we may expect in the near future. The very large new plantations that are only just beginning to produce in Wisconsin, the increase in acreage on Cape Cod and in other parts of Massachusetts, and, also, the quite extensive tracts being improved in Michigan and Indiana, are very sure to raise the average crops to much larger amounts than we have ever yet seen, in the near future. I do not think it will be long before our esteemed Statistician will report crops of a *full million* of bushels to be offered on our markets in a single year.

In view of this prospect and the present facts, will not this Association at this time take some very energetic steps towards opening *new outlets* for the surplus of our crops in foreign lands.

I have been told that *some efforts* have been made, and that a *few berries* have been sent to Liverpool and London and sold, but that prices realized have been unsatisfactory, and the demand has grown very slowly.

But, from all I can learn, no such *energetic, thorough efforts* have been made as would be necessary to introduce a *new mowing machine*, nor such as have been made to introduce other *special food products* of American origin, nor such as would be made if the whole cranberry product was controlled by a monopoly of one or two companies of enterprising men, who would wish to get the most possible from the total product.

I claim that the only true way to build up a foreign demand for

any large amount of our surplus crops is to select men specially adapted to the business, and send them over to make a personal special effort, just as would be done by the *inventors* or *manufacturers* of a new *moving machine*, and to send them in force sufficient to thoroughly canvass that market, and to study the special features necessary to gain that market, and how best to get before the people.

I have been recently told that the sale of American apples in Europe could be immensely increased by intelligent *American trade methods*, and this from an *experienced* and *intelligent* dealer, who fully concurred in my opinions as to the necessary manner of introducing the American cranberry.

The business needs intelligent study *on the ground*, by personal representatives, who will study how and what system is the best to get the people to using this fruit, as it is used in this country. Even *here*, I am told by retailers that the fruit needs to be kept in *sight*, where every one who enters the store will see them; and my own experiment, of furnishing retailers with attractive show cards and a neat circular of directions for cooking, I am told, is quite effective in increasing the retail sales. The English green grocer is usually a very small shop-keeper, and only buys a small amount at a time, and would rarely buy so large an amount at once as a *barrel* of cranberries—even a bushel would seem a large venture to most of them.

The English people consume large amounts of currants, gooseberries and apples, and, there is no doubt, would use a great many cranberries, if they were properly introduced. But it will require *energetic personal* effort to do it, by men determined to succeed. And the same is true of *Germany* and *France*.

It will require some study to get up printed directions for preparing them in a manner to suit the tastes and customs of these people, and such directions, with attractive show cards, should be plentifully supplied with every package.

When we see what horrible stuff is furnished by many of our hotels and restaurants, called *cranberry sauce*, we cannot wonder that, away from home, but few should learn, unaided, how to prepare them so they will be attractive and win purchasers.

To sum up, then, in a few words: "Let enough of the largest growers combine, to send two or more of the very best men to be found, to make a *systematic, thorough, personal* effort for a whole season—to work up a sale by all possible methods; giving away, when

necessary, to editors and others; getting recommendations from doctors as to healthfulness of the fruit as diet; giving personal instruction to have them properly cooked, in leading hotels and restaurants, and having them so *widely* and *generally* exposed for sale as to familiarize the people with their use."

In this way I feel assured that a yearly demand can be made in the future for thousands of barrels, where now the name of the American cranberry is unknown.

I would suggest to this Association a committee to make efforts to see how many could be induced to join in a combination to make such an effort as I have suggested. I would suggest a committee of Cape Cod and New Jersey growers; and after seeing what can be done among the Eastern growers, that one or more of such committee come West and work up an interest among Western growers.

I, myself, will help what I can, but from the pressure of my other business, and the smallness of my cranberry interest, I cannot do a great deal, but will help to introduce the idea to many of the growers I am personally acquainted with, and, perhaps, could assist any one who was to go on this errand, from my experience in other lines in European countries.

Respectfully submitted,

S. H. COMINGS.

On motion, Mr. Comings was added to the Foreign Trade Committee.

The following communication was read and ordered printed:

THE WILD CRANBERRY CROP OF WISCONSIN.

A peculiar feature of the cranberry interest in Wisconsin is our spontaneous or wild crop.

The cranberry vine is found over an immense area in this State in its native condition.

We find them along the highways, where the ground is moist; they encroach upon the low-land pastures. Last season I saw quite a crop of berries on the damp portion of a field that had been plowed and seeded to red-top and timothy.

Our low, sandy soil here in Wisconsin seems equally adapted to the growth of cranberry vines with our extensive peat marshes. Once in

seven to ten years we get an immense crop of wild berries. The plants or vines, in their native state, are kept down by the severe freezing early in the spring when the snow goes off, usually killing them to the ground, and, of course, prevents fruiting for that season.

These wild, unprotected vines are also preyed upon by injurious insects.

It takes a series of about three favorable seasons to grow vines sufficient to raise a wild crop of sufficient magnitude to affect the market, the same as has been done this season.

These favorable seasons follow occasionally, but fortunately at long intervals, for the legitimate cultivators of the vines.

Along the right of way, the past season, on our railroads, in some places the ground was, last fall, red with berries, and the section hands who repair the track, in some cases, left the employ of the road and earned \$10 to \$15 per day raking berries and selling them at \$5 per barrel.

It is fortunate for growers that climatic conditions of Wisconsin do not favor the development of a large spontaneous crop only at long intervals. For the wild berry is certainly a factor in our markets, and has a leveling effect on the prices of cultivated fruit. We should look upon insects that prey upon the fruit and vines, and upon the frosts of spring and fall, that often cut off the unprotected crop, as friends instead of enemies to scientific and thorough cranberry culture.

The majority of our so-called cultivated cranberry marshes in Wisconsin are simply natural bogs, with proper drainage and dams for flowage, thus merely assisting the native vines to overcome the grass, moss and other growth found native on the bog.

These berries, in the main, are but a little better than the wild berries, so called.

Of late years a good deal scalping has been done—removing the soil and resetting; but little attention has been given to securing choice varieties of fruit.

A large-sized, fancy berry sells here in market at \$2.50 to \$3 more than the average Wisconsin fruit, and it is apparent that fine fruit will pay the cost of harvesting and marketing over the common stock, so that when we reach the point, if ever we do, that common berries are not worth harvesting, choice fruit will still pay a profit.

I have a marsh of twenty acres, made by simply leveling a high,

dry field of poor, sandy land and irrigating with a small trout stream. The land is as poor as pure beach-sand, without a trace of vegetable loam, apparently, except what the water has deposited, or formed from the decaying leaves of the vines. This little yard is a perfect success, has been in operation for thirteen years, averages 180 bushels of berries per acre, and is the only thing of the kind here in the West.

For Wisconsin we look for a continued interest in cranberry culture, and more thorough methods and an intelligent cultivation.

The Wisconsin Dairymen's Association holds its meetings several times a year, sometimes in other States adjoining. How would it do for the American Cranberry Growers' Association to hold a special summer meeting in Wisconsin, and so increase its influence and membership?

L. G. KNIFFEN,
Milwaukee, Wis.

An estimate was taken of the amount of fruit remaining in the hands of growers, which aggregated 45,125 bushels.

Adjourned.

A. J. RIDER, *Secretary*,
Trenton, N. J.

STATE GRANGE OF NEW JERSEY,
PATRONS OF HUSBANDRY.

STATE GRANGE OF NEW JERSEY.

OFFICERS:

Master	RICHMAN COLES.....	Woodstown, Salem county.
Overseer.....	JOHN STATESIR, JR.....	Colts Neck, Monmouth county.
Lecturer	MORTIMER WHITEHEAD.....	Middlebush, Middlesex county.
Steward.....	HENRY F. BODINE.....	Locktown, Hunterdon county.
Assistant Steward	GEORGE H. GAUNT.....	Paulsboro, Gloucester county.
Chaplain	CHARLES SHOEMAKER.....	Mantua, Gloucester county.
Treasurer	C. A. RULON.....	Swedesboro, Gloucester county.
Secretary	M. D. DICKINSON.....	Woodstown, Salem county.
Gate Keeper.....	E. E. HOLCOMBE.....	Lambertville, Hunterdon county.
Ceres.....	LYDIA D. COLES	Woodstown, Salem county.
Pomona.....	MAY J. WHITEHEAD.....	Middlebush, Middlesex county.
Flora	ETTIE A. JESSUP.....	Cinnaminson, Burlington county.
Lady Assistant Steward.....	HANNAH C. HOLCOMBE.....	Lambertville, Hunterdon county.

EXECUTIVE COMMITTEE:

RICHMAN COLES.....	Woodstown, Salem county.
JAMES H. BAIRD.	Marlboro, Monmouth county.
ROBERT TAYLOR.....	Columbus, Burlington county.
JOHN T. COX.....	Readington, Hunterdon county.
I. W. NICHOLSON.....	Camden, Camden county.

LIST OF DEPUTIES FOR 1886.

Burlington county.....	D. T. HAINES.....	Medford, Burlington.
Camden county.....	AMOS EBERT.....	Ashland, Camden.
Cumberland county.....	J. C. BOWEN.....	Shiloh, Cumberland.
Essex and Sussex counties.....	R. F. HARRISON.....	Livingston, Essex.
Gloucester county.....	MATTHEW ALLEN.....	Jefferson, Gloucester.
Hunterdon county.....	J. T. COX.....	Readington, Hunterdon.
Monmouth county.....	JOHN STATESIR, JR.....	Colts Neck, Monmouth.
Salem county.....	EMPSON ATKINSON.....	Woodstown, Salem.
Mercer county.....	THEODORE CUBBERLY.....	Hamilton, Mercer.

LIST OF MASTERS AND SECRETARIES, WITH THEIR POST OFFICE ADDRESSES, OF THE SUBORDINATE
GRANGES OF NEW JERSEY.

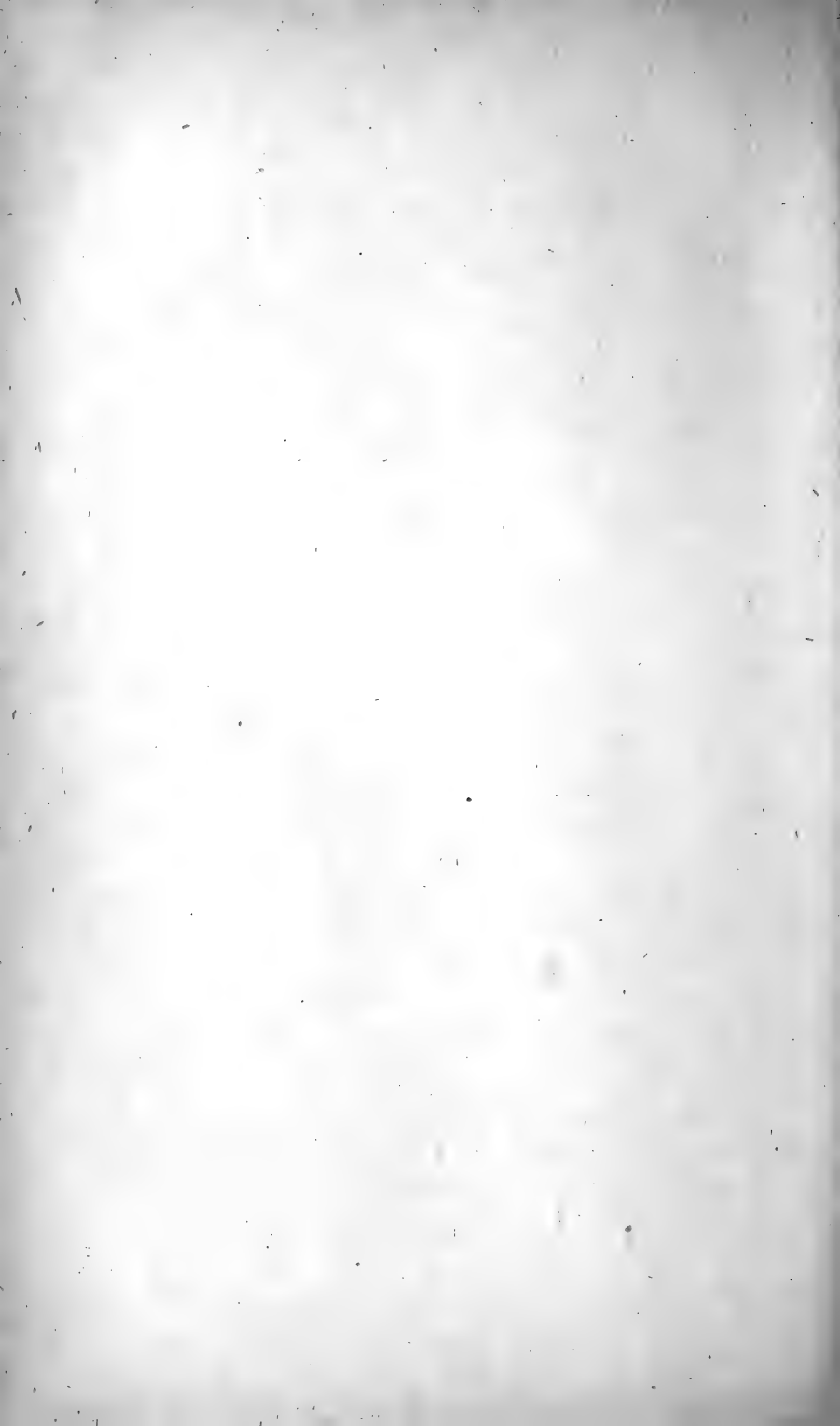
Number.	NAME.	MASTERS.	P. O. ADDRESS.	SECRETARIES.	P. O. ADDRESS.
2	Marl Ridge.....	B. A. Morton.....	New Egypt, Ocean county.....	F. S. Gaskill.....	New Egypt, Ocean county.
5	Swedesboro.....	Henry Pancoast.....	Swedesboro, Gloucester county.....	Jennie L. Moore.....	Swedesboro, Gloucester county.
8	Moorestown.....	George S. Gillingham.....	Moorestown, Burlington county.....	Kate B. Lippincott.....	Harford, Burlington county.
9	Woodstown.....	T. B. Moore.....	Woodstown, Salem county.....	George H. Kirby.....	Woodstown, Salem county.
10	Paulsboro.....				
11	Vineland.....	H. R. Ingalls.....	Vineland, Cumberland county.....	Mary H. Lee.....	Vineland, Cumberland county.
12	Ringoes.....	E. E. Holcombe.....	Mt. Airy, Hunterdon county.....	F. S. Holcombe.....	Mt. Airy, Hunterdon county.
14	Edgewood.....	Nathan S. Wright.....	Burlington, Burlington county.....	William S. Taylor.....	Burlington, Burlington county.
16	Hopewell.....	Daniel W. Davis.....	Shiloh, Cumberland county.....	J. L. Mickle.....	Shiloh, Cumberland county.
18	Cumberland.....	John Tyler, Jr.....	Greenwich, Cumberland county.....	Morris Goodwin.....	Greenwich, Cumberland county.
24	Union.....	E. J. Osler.....	Merchantville, Camden county.....	Franklin Horner.....	Parry P. O., Burlington county.
26	Harrisonville.....	Paul Avis.....	Harrisonville, Gloucester county.....	Hannah Ann Moore.....	Harrisonville, Gloucester county.
32	Bridgeport.....	F. B. Rulon.....	Swedesboro, Gloucester county.....	D. R. Black.....	Swedesboro, Gloucester county.
36	Medford.....	Samuel G. Prickett.....	Medford, Burlington county.....	Phebe Ann Phillips.....	Medford, Burlington county.
37	Mt. Holly.....	James Lippincott.....	Mt. Holly, Burlington county.....	Henry Ellis.....	Juliestown, Burlington county.
38	Haddon.....	R. Lewis Shivers.....	Camden, Camden county.....	Horace M. Ebert.....	Asland, Camden county.
39	Mantua.....	Joseph Noblet.....	Wenonah, Gloucester county.....	Mary G. Duell.....	Wenonah, Gloucester county.
40	Lawrence.....	Franklin Dye.....	Trenton, Mercer county.....	Charles Smith.....	Lawrenceville, Mercer county.
43	Hope.....	D. W. Padgett.....	Bridgeton, Cumberland county.....	William B. Cook.....	Bridgeton, Cumberland county.
46	Pedricktown.....	Wilson L. Justice.....	Pedricktown, Salem county.....	Hubert B. Shoemaker.....	Pedricktown, Salem county.
49	Rancocas.....	Joseph Lundy.....	Rancocas, Burlington county.....	Uriah Borton.....	Burlington, Burlington county.
50	Pemberton.....				
51	Mullica Hill.....	Joseph S. Carter.....	Mullica Hill, Gloucester county.....	Warren Atkinson.....	Mullica Hill, Gloucester county.
56	Readington.....	W. H. Opie.....	Readington, Hunterdon county.....	John T. Cox.....	Readington, Hunterdon county.
57	Centre Grove.....				
58	Columbus.....	Thomas A. Keeler.....	Columbus, Burlington county.....	Robert Taylor.....	Columbus, Burlington county.
60	Courses Landing.....	T. Newton Steward.....	Sharptown, Salem county.....	Henry (hardiner.....	Sharptown, Salem county.
61	Crosswicks.....	David C. Rulon.....	Crosswicks, Burlington county.....	Elizabeth A. Rogers.....	Crosswicks, Burlington county.
64	Pennington.....				

LIST OF MASTERS AND SECRETARIES, WITH THEIR POST OFFICE ADDRESSES—Continued.

Number.	NAME	MASTERS.	P. O. ADDRESS.	SECRETARIES.	P. O. ADDRESS.
73	Ewing	J. V. Green.....	Wilburtha, Mercer county.....	Wallace Lanning.....	Ewingville, Mercer county.
77	Mercer	Ralph Ege.....	Hopewell, Mercer county.....	W. I. Phillips.....	Hopewell, Mercer county.
79	Hamilton.....	Theo. Cubberly.....	Hamilton Square, Mercer county.....	Thomas Q. Taylor.....	Hamilton Square, Mercer county.
81	Friesburg.....	Charles F. Dickinson.....	Cohansey, Cumberland county.....	H. C. Perry.....	Allaway, Salem county.
85	Williamstown.....	C. F. Tice.....	Williamstown, Gloucester county.....	Joseph J. Ayars.....	Williamstown, Gloucester county.
87	South Vineland.....	N. H. Stephens.....	South Vineland, Cumberland county.....	William Russel.....	South Vineland, Cumberland county.
88	Locktown	Uriah Sutton.....	Locktown, Hunterdon county.....	Isaac H. Hoffman.....	Locktown, Hunterdon county.
90	Blackwood	John M. Stetser.....	Chews Landing, Camden county.....	Theo. Hider.....	Blackwood, Camden county.
92	Monmouth.....	John Statesir.....	Colts Neck, Monmouth county.....	James H. Baird.....	Marlboro, Monmouth county.
98	Allentown .....	.....	.....	.....	.....
99	Holmdel	Milton Smock.....	Wickatunk, Monmouth county.....	S. B. Wells.....	Bradevelt, Monmouth county.
101	Sergeantsville.....	John H. Hartpence.....	.....	Judson Rittenhouse.....	Sergeantsville, Hunterdon county.
104	Livingston	H. F. Harrison.....	Roseland, Essex county.....	W. W. Burnette.....	Livingston, Essex county.
106	Kingwood	M. F. Kugler.....	Tumble, Hunterdon county.....	J. H. Stull.....	Kingwood, Hunterdon county.
107	Caldwell.....	Milton H. Canfield.....	Caldwell, Essex county.....	Franklin J. Wilson.....	Verona, Essex county.

POMONA GRANGES.

Number.	NAME.	MASTERS.	P. O. ADDRESS.	SECRETARIES.	P. O. ADDRESS.
1	Burlington Co....	George L. Gillingham.....	Moorestown, Burlington county.....	Edmund Braddock.....	Medford, Burlington county.
3	Hunterdon Co....	David Bodine.....	Locktown, Hunterdon county.....	F. S. Holcombe.....	Mt. Airy, Hunterdon county.
4	Cumberland Co....	.....	.....	.....	.....
5	Mercer Co.....	Theo. Cubberly.....	Hamilton Square, Mercer county.....	George W. Johnston.....	Trenton, Mercer county.
6	Salem Co.....	E. L. Borton.....	Woodstown, Salem county.....	E. Atkinson.....	Woodstown, Salem county.
7	Camden Co.....	.....	.....	.....	.....
8	Gloucester Co....	Filmore Gaunt.....	Mullica Hill, Gloucester county.....	F. B. Ridgway.....	Mullica Hill, Gloucester county.
9	Monmouth Co....	.....	.....	.....	.....



REPORT OF STATE GRANGE OF NEW JERSEY.

BY RICHMAN COLES, OF WOODSTOWN.

MR. PRESIDENT AND GENTLEMEN OF THE STATE BOARD OF AGRICULTURE—We have met together to-day in the capital city of our State, under the law organizing this body, and for the purpose of consulting together as to the best means of conducting some of the many interests relating to agriculture. I say some, because the term agriculture extends over so broad a field that to attempt to discuss all its many branches would prolong this session into weeks instead of days.

Is it not, then, desirable that farmers should meet more frequently together for the purpose of consulting as to the best means of conducting the different parts of their varied industry? The horse, with his many diseases; the dairy interest, sheep husbandry, the hog, poultry, bee keeping, the rotation of crops, the raising of truck, market gardening, the use of fertilizers, the growing of fruits and berries, &c., all claim his attention.

For the purpose of meeting this necessity was organized the order of Patrons of Husbandry. Although the National Grange of Patrons of Husbandry has entered into the twentieth year of its existence, yet there is, perhaps, no order, organization or society in existence, aiming for the general good, of which so little is known by the people at large; or the principles, aims and objects of which are so generally misunderstood.

Then, as this organization was founded with the view of enlightening the farmer, and for the purpose of binding more closely together, for their advancement, those engaged in that calling, it may not seem out of place to occupy a few minutes of the time of our meeting in considering the causes which led to its organization, the principles on

which it was founded, the trials and discouragements it has encountered together with some of the achievements it has performed.

The founders of the order are well known, and, with one exception, are still living.

In January, 1866, Mr. O. S. Kelly, one of the clerks of the Agricultural Department, at Washington, was sent on a journey through the South and West for the purpose of obtaining some statistical information that, owing to the disorganized condition of the country, could not be obtained by the usual custom. In his travels, which occupied nearly four months, he, for consultation, sought out the leading agriculturists of the sections of country through which he passed. His intercourse with those farmers, and seeing their helpless condition, turned his quick mind into a train of thought. On the one hand, he saw the commercial, the manufacturing, banking, mining and railroad interests all thoroughly organized and co-operating together, influencing and moulding legislation, and receiving more than their just shares of the wealth produced by the husbandman. On the other hand, he saw those engaged in agriculture, which, at that time, embraced more than one-half of the whole population, unorganized and powerless before them.

Having returned to his post of duty in the department, the convictions that had been forced upon him during his travels still kept uppermost in his mind, viz.: that farmers needed organization.

He knew that, with very few exceptions, agricultural clubs had been short-lived and ineffectual. Also, that State and county fairs, although answering a certain purpose, were seldom controlled by farmers.

He communicated his ideas to others of his acquaintance, some of whom embraced his views and formed a band, seven in all, who, on December 4th, 1867, organized a National Grange at Washington, D. C. For four successive years those seven met in annual session. At the fifth annual session, Dudley W. Adams, of Iowa, was added to the original number. At the sixth, which met in Georgetown, January, 1873, eleven States were represented, they reporting the existence of more than 1,300 subordinate Granges.

In the years of 1873 and 1874 more than 20,000 subordinate Granges were formed throughout the States. In February, 1874, the National Grange met in St. Louis and issued its declaration of purposes, a part of which are as follows:

United by the strong and faithful tie of agriculture, we mutually resolve to labor for the good of our order, our country and mankind.

We heartily indorse the motto: "In essentials, unity; in non-essentials, liberty; in all things, charity." To develop a better and higher manhood and womanhood among ourselves; to enhance the comforts and attraction of our homes; to strengthen our attachment to our pursuits. At the same time they declared it to be their purpose to wage no warfare upon any other interest; to advance the cause of education by all means within their power; to destroy, as far as possible, the then existing spirit of sectionalism, and to give a proper appreciation to the abilities and sphere of woman.

At that session thirty-two States were represented. The order had suddenly become strong and powerful, and from that strength came its weakness. The gates of entrance had not been properly guarded, and allowed those to creep in whose presence was detrimental to the good of the order. Lawyers, doctors, merchants, bankers and other business men rushed to the gates seeking admission.

After a time a reaction commenced; those who had thus come into the order, finding they could not control it to their especial advantage, left it, but, in the meantime, using their utmost endeavors to demoralize its ranks, and in some sections succeeding in entirely destroying its usefulness.

Unfortunately for the order in its early history the impression went out that its chief mission was to war with railroads, denounce business men and antagonize many of the leading interests of our country; but time is fast removing those wrong impressions from the minds of the people. One of the principles of our order is that we wage no warfare upon any other business interest whatever; we simply object to the abuse of their privileges. It is true that the great farmers of the Northwest, who had mortgaged their farms to build railroads, with the expectation of being benefited thereby, found to their disappointment their stocks absorbed and the controlling of the railroad passing out of their hands. Then was established a system of freight charges that were ruinous to agriculture. They then broke loose from party ties and elected men favoring their own interests, who passed laws breaking up this system of spoliation in these charges.

That there should be some action taken by Congress for the regulation of interstate commerce, and thereby prevent unjust discrimination in traffic, is the opinion not only of Patrons of Husbandry but of a

majority of farmers and business men as well. Twice have bills of that nature been passed by the lower House of Congress, but both of them have been defeated by the Senate. A Senate committee was then appointed for the purpose of collecting information on the subject during the recess of Congress. They held meetings in different sections of the country to hear the opinions of railroad officials and business men who were invited to appear before them. They also issued a circular letter which they sent out to many who were remote from their places of meeting. As far as has been ascertained this letter was sent to the Master of every State Grange in the Union. In it was embraced fifteen separate and distinct questions. The answers given by J. J. Woodman, of Michigan, Master of the National Grange, have in his annual address been made public and should be carefully read not only by farmers but by every one who feels an interest in the prosperity of the whole country. I state these facts merely for the purpose of showing you that the Grange has become so national in its character, and the views of its leaders on the important questions of the day, while they require profound thought, yet they are given in so plain and concise a manner as to attract the attention of those seeking information in the affairs of the nation.

But it is perhaps as an educator of the people, that the Grange has been the most successful. I would not have you think this education is simply knowledge derived from our text-books; but education in the Grange is of a practical character, and includes knowledge gathered from every source; that which originates thought, develops ideas and elevates every one who comes within its limits. Grange libraries are becoming very common and add much to the interest of our order. Most towns of importance have a circulating library, but the farmer, who lives isolated, is deprived of this benefit, and the Grange library in part supplies its place and makes up to his family that which he may not be able to provide. The word family is here used, for the member who does not at least endeavor to induce his wife and children to become members of the order, is rarely a good patron.

The admission of women has done much toward ennobling and extending the influence of the order, besides elevating as well as widening her round of occupation. It takes her from the routine of daily toil and infuses her with new ideas, developing her mind and drawing out the latent powers within her. The farmer who, once

each week, after an early tea will harness his horse and take his wife and children to a cozy Grange hall, and then meet in social gathering, varying the exercises of the evening so as to include music and literary exercises as well as discussions on various topics of the farm and household, confers a favor upon them such as he could in no other way.

The reason of agriculture clubs being a failure, is because woman has been excluded from membership; and Granges whose gatherings are not graced by her presence, and cheered by her words of counsel, are irregular in their meeting and careless in their work.

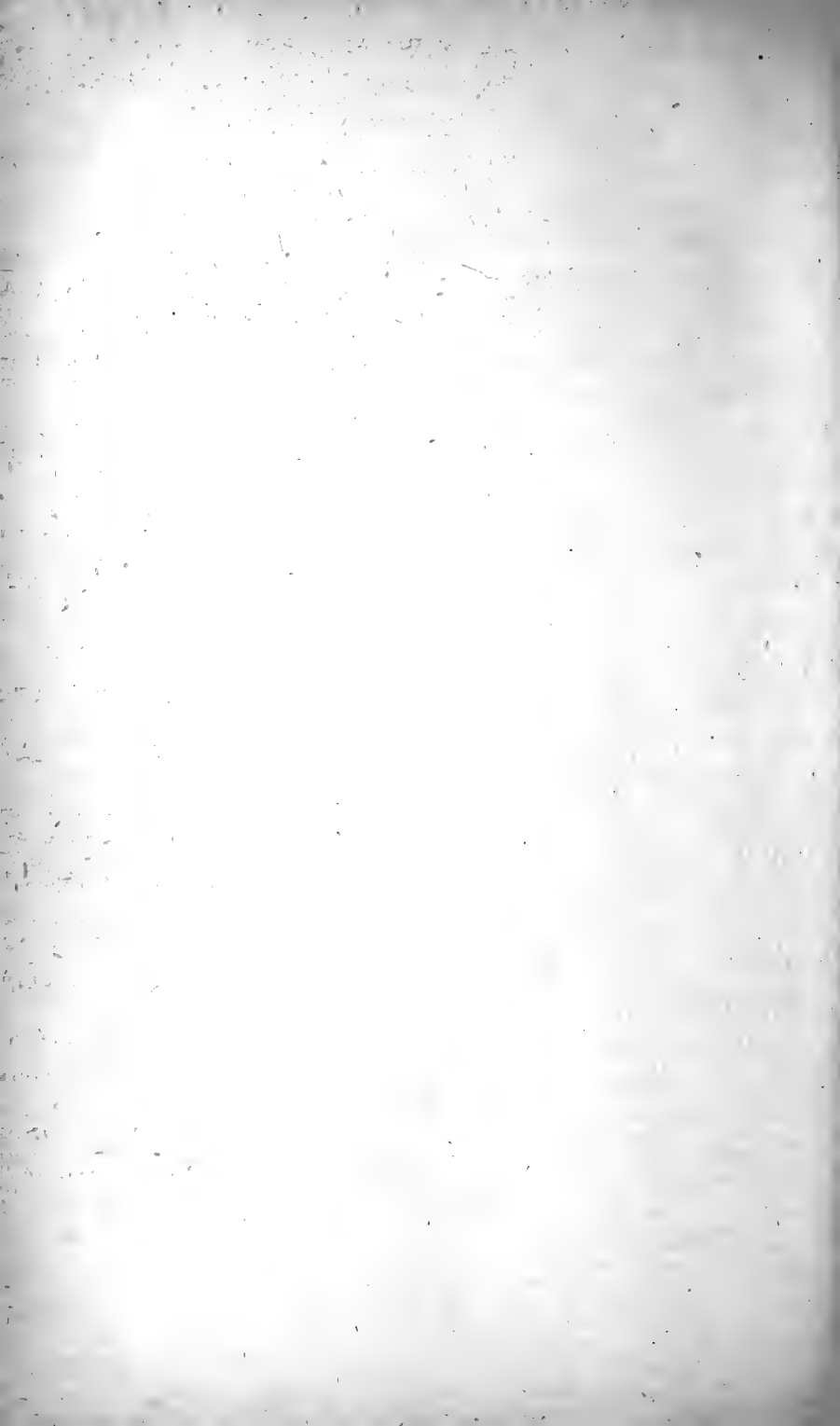
In conclusion: At the last meeting of the National Grange, held in Boston, in November, 1885, representatives were present from thirty-two States, who reported the existence of twenty-four thousand (24,000) subordinate Granges. The majority of Granges in this State meet weekly, and one reported 52 meetings within the year, with an average attendance of 53 members.

In such an assemblage, properly conducted, what a grand opportunity for acquiring knowledge, and it is an old and true saying that knowledge is power; and that in the rough and tumble of everyday life brains have always ruled the physical man and always will.

One of our lecturers has said that this system of education will make readers, and readers will make thinkers, and thinkers are what the farmers of the country need to-day; and, also, out of mere farmers in country neighborhoods, good speakers, writers and thinkers have been developed through Grange education, who are capable of filling any position in life.

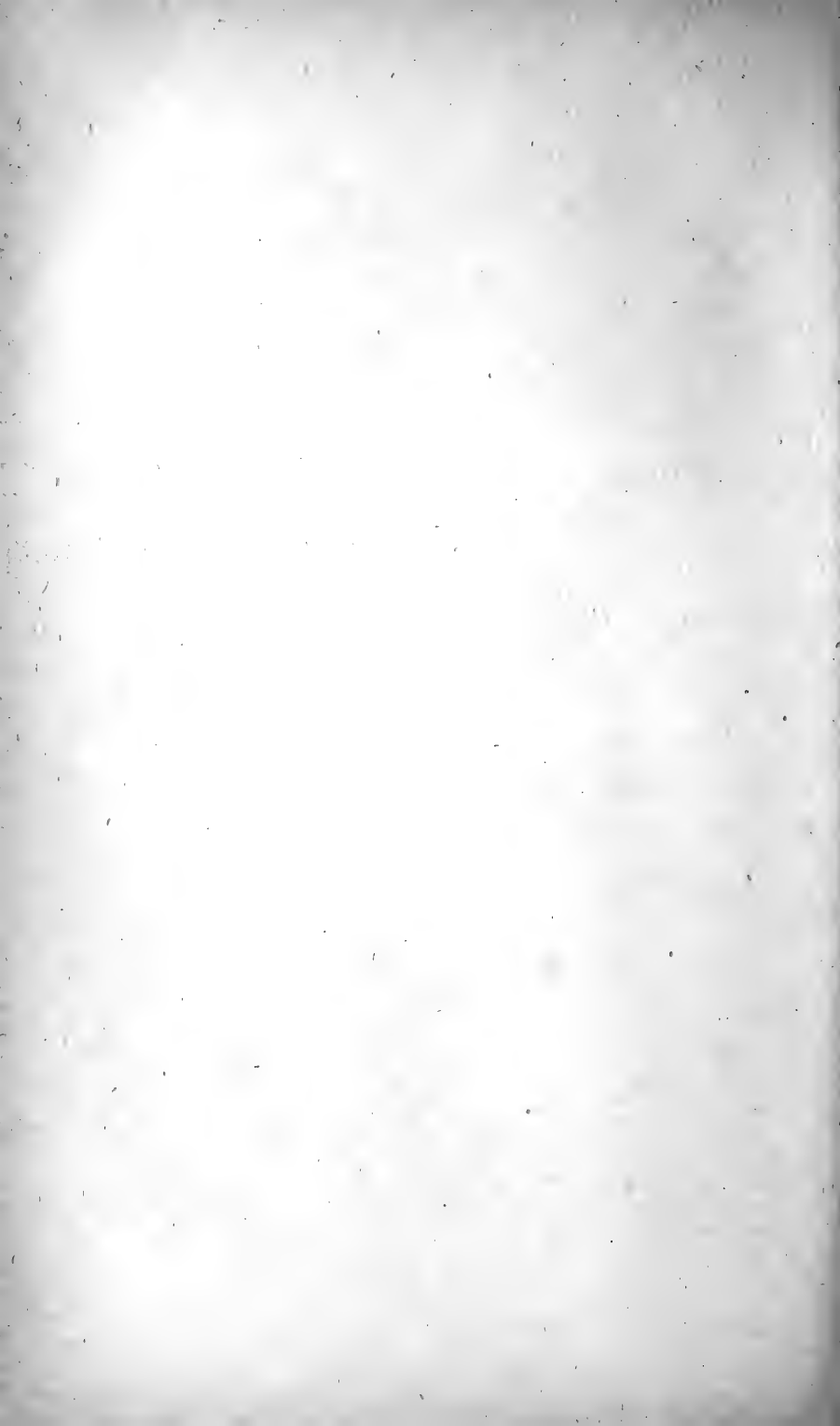
The Grange principles, then, are to develop a better and higher manhood and womanhood; to enhance the attractions and comforts of our homes; to study all questions of political economy; to encourage purer elections; to be bound by principles rather than by party ties.

I would recommend them to you for your thought and consideration, not only occupying a short time in this meeting, but, as you desire the advancement of your calling; as you desire those thus engaged shall occupy a higher social status in society: take them to your fireside, read them, study them, give them your careful attention, and then, whether within the Grange or without its gates, let them govern your actions.



Agricultural and Horticultural Societies.

Officers, Exhibition, Society and Crop Reports.



ATLANTIC COUNTY.

EGG HARBOR CITY AGRICULTURAL SOCIETY.

(Organized March 23d, 1859.)

OFFICERS FOR 1886.

<i>President</i>	PHILIP STEIGAUF.....	Egg Harbor City.
<i>Vice-President</i>	JOHN C. BLAAKE	Egg Harbor City.
<i>Secretary</i>	VALENTINE P. HOFMANN.....	Egg Harbor City.
<i>Treasurer</i>	WILLIAM BEHNS.....	Egg Harbor City.
<i>Librarian</i>	LOUIS YOUNG.....	Egg Harbor City.

BOARD OF TRUSTEES.

FREDERICK FIEDLER, CHARLES DIHLMANN, HENRY HAMBACHER.

Delegate to State Board..... V. P. HOFMANN.

The Society has at present seventy-two members.

The annual fair will be held at Egg Harbor City the third or fourth week in September.

EGG HARBOR CITY AGRICULTURAL SOCIETY AND CROP REPORTS.

BY V. P. HOFMANN.

The season 1885 opened with a very late spring, which was followed by a protracted drouth until towards August, when copious and frequent rains set in, continuing at intervals, closing very favorably ; no killing frosts until towards November 20th. Considering the several drawbacks and benefits, we may, in general, pronounce it as a favorable year for agriculture.

Considerable more attention has been given to improvements in stock ; although it may be not so marked as in other more favorable sections of this State, yet a gradual progress may be noted.

That our sandy soil may return very favorable crops, provided proper manures and fertilizers, and culture be applied, can best be judged of the maximum yields I have ascertained from different parties in this vicinity. Wheat yielded, 34 bushels per acre ; rye, 30 ; corn, 50 ; potatoes, 180 to 200 ; sweet potatoes, 220 ; turnips, 400.

Where six years ago not one acre was planted with garden truck, about 300 acres are now planted with the same. It is transported to Atlantic City, where it finds a remunerative market. Our canning factory, although in its infancy, worked up 150 tons, for which it paid \$7.50 a ton. Yield reported about nine tons per acre.

Apples yielded a moderate crop of not good keeping qualities ; pears and quinces, full crop and excellent quality ; German prunes, full crop, yield about 2 bushels per tree.

About 300 acres in this vicinity are planted with small fruits, and the acreage extending annually. Strawberries, reported yield from two-thirds acre, 2,400 quarts, prices ranging from 6 to 12 cents a quart. Albany Wilson is considered the most reliable for this neighborhood ; Crescent Seedling, Sharpless and Bidwell are other favorable varieties. The new plantations of blackberries suffered considerably during the winter of 1884-5 ; from one-third to one-half of the canes were killed to the ground ; returns noted about 84 bushels per acre ; Early Wilson is the main variety, with some Lawtons. Raspberries were considerably injured by the severe winter ; Turner and Brandywine as principal varieties ; no yield ascertained. One hundred and forty-three thousand and twenty-four quarts of berries were shipped from our two railroad stations to Philadelphia and Atlantic City markets.

Our chief industry is grape raising and manufacture of wines, chiefly clarets. This year's harvest can be estimated at 1,500,000 pounds, of which 60,941 pounds were shipped to market and the balance pressed into wine, so that this year's vintage can be estimated at at least 100,000 gallons ; six of the most prominent vintners alone manufacturing 82,840 gallons. As a favorable omen, it may be considered that the grape-rot has been decreasing yearly (with the exception of the Concord, of which about one-fourth crop rotted) ; there was a full crop of all other varieties. Our grapes are seldom affected with the mildew. The rose bug commits some depredations among the varieties included in the Cordifolio or Riparia class. The principal varieties of the grape grown here, and which are mostly

used in the manufacture of wines, are: Norton's Virginia, Cynthiana, Claevenar, Franklin, Diogenes, Ives' Seedling, Concord, Martha, Venango, Taylor's Bullit and Elvira. Missouri Rieslings are very favorably mentioned among the newer white grapes.

Our vineyards are generally prepared by trenching the soil to the depth of 18 to 24 inches. Manure applied liberally while planting the vines. The vines are planted at various distances, from 5x6 to 7x8 feet, the single stake system being generally in use. White cedar stakes and posts are used to train the vines on. The vines are generally pruned according to the annual renewal system; the cylindrical method is used by some parties with great advantage. The yield per vine varies according to varieties, fertilizers and cultivation, from 4 to 10 pounds. Some parties who have trained theirs on extended trellises realized from 80 to 200 pounds per vine. As to quality of grapes for 1885, on Oechsle's Must Scale, the following results were reported: Concord, varying from 65° to 80°; Clinton, 78°; Norton, 80° to 95°; Cynthiana, 95°; Claevenar, 85°; Martha, 90°; Elvira, 70°. Stable manure and compost is generally applied to the vines. Some few—but not conclusive—experiments with commercial fertilizers have been reported, in which the parties claim larger yields and more immunity from the grape-rot, indicating that our soil is deficient in certain very necessary plant elements to perfect the grape.

The railroad companies having increased the freight rates on fertilizers, it has had a depressing effect upon all farmers in this vicinity, as all are more or less dependent upon outside sources for their supply of manures.

The annual fairs of our Agricultural Society are steadily improving and have been instrumental in demonstrating to unbelievers what choice varieties of field and garden products, fruits and grapes this benighted section of the State is able to produce. The financial condition of the Society is good; at the last fair a surplus of \$381.73 was realized. The indebtedness has decreased, now being \$750. The value of the buildings is \$3,000. Our Society makes it a rule to gratuitously disseminate among its members new and meritorious varieties of fruits, &c.

BURLINGTON COUNTY.

BURLINGTON COUNTY BOARD OF AGRICULTURE.

OFFICERS FOR YEAR 1886.

<i>President</i>	JOHN E. DARNELL.....	Mt. Laurel.
<i>Vice-President</i>	EMMOR ROBERTS.....	Fellowship.
<i>Secretary</i>	HENRY I. BUDD.....	Mt. Holly.
<i>Treasurer</i>	ISAAC FENIMORE.....	Mt. Holly.
<i>Delegates to State Board</i>	{ HENRY I. BUDD.....	Mt. Holly.
	{ JAMES LIPPINCOTT	Mt. Holly.

BOARD OF DIRECTORS.

JOSEPH WILLS.....	Rancocas.....	Burlington Co. Agr'l Society.
SAMUEL C. DE COU.....	Moorestown.....	Moorestown Agr'l Society.
MARK H. BUZBY.....	Masonville.	Mt. Laurel Farmers' Club.
DAVID T. HAINES.....	Medford	Medford Grange.
JAMES LIPPINCOTT.....	Mt. Holly.....	Mt. Holly Grange.
JOSHUA HOLLINSHEAD.....	Hartford.....	Moorestown Grange.
ROBERT TAYLOR.....	Columbus.....	Columbus Grange.
EDWIN SATTERTHWAIT	Crosswicks.....	Crosswicks Grange.
JUDSON C. GASKILL	Pemberton.....	Pemberton Grange.
EDMUND COOK.....	Burlington.....	Edgewood Grange.
JOSEPH LUNDY.....	Rancocas	Rancocas Grange.

During the past year there have been but two meetings of this Board. The first one, held at the close of the Summer harvest while the farmers were recreating from their exhausting labors, did not elicit much interest outside of describing the condition of growing crops and stating the probable yields of those then garnered.

The second meeting, held in December, employed its time in electing officers and directors, recording the results of the season's growth, and preparing and passing the following resolutions, which the Secretary was ordered to forward to the State Board of Agriculture for action, also to our Representatives in Congress :

I.

WHEREAS, The extreme low price of pork (which is one of the largest crops of the American farmer) is seriously affecting the profits of agriculture, in this country; *and whereas*, the President in his recent message to Congress says: "I regret to say that the restrictions upon the importation of our pork into France continue, notwithstanding the abundant demonstration of the absence of sanitary danger in its use; but I entertain strong hopes that with a better understanding of the matter this vexatious prohibition will be removed. It would be pleasing to be able to say as much with respect to Germany, Austria, and other countries, where such food products are absolutely excluded, without present prospect of reasonable change;" *and whereas*, the President does not in his message give the information as to the reasons or causes why American pork is absolutely excluded in Germany, Austria, and other countries, leaving us to suspect that in addition to sanitary condition it may be in a manner at least retaliation on account of the duties which we impose on their productions; therefore, *Resolved*, That this Burlington County Board of Agriculture request our Representatives in Congress to make diligent investigation into this matter and to bring about a change that will be to the advantage of our agriculture.

II.

WHEREAS, Contagious diseases, such as pleuro-pneumonia among cattle, cholera and other diseases among swine, exist to such an extent in our midst as to seriously affect the profits of agriculture; *and whereas*, our State laws fail to eradicate these diseases on account of their continual introduction by diseased cattle from other States passing over or resting on our soil; therefore, be it

Resolved, That this Burlington County Board of Agriculture petition our members in National Congress to enact such laws as will, in co-operation with those passed by the different States, prevent the transmission of these diseases from one State to another, and quickly and thoroughly eradicate them from our whole land.

III.

WHEREAS, The prosperity of the country largely depends upon the economical and intelligent administration of its agricultural interests; therefore, be it

Resolved, That this Burlington County Board of Agriculture petition our members in Congress to elevate the office of Commissioner of Agriculture to the dignity of a Cabinet position, to the end that its influence may be commensurate with the importance of agriculture to the life and prosperity of the nation.

COUNTY SOCIETY AND CROP REPORTS.

BY HENRY I. BUDD.

The blanks for collecting crop reports, prepared and sent forth by your worthy Secretary, distributed by the County Secretaries, although not naming all the varieties of our products, are a great improvement upon former methods.

But the habit of careful observation, and still more the habit of careful record, are qualities so sadly deficient in our average farmer, it is with difficulty full responses can be obtained, and only a few have ventured to give the number of acres devoted to each crop in each district or township, consequently we are forced, in many crops, to be satisfied with percentages instead of number of acres.

However, by these blanks, and from other sources, we will be able to give you a fairly intelligent idea of our farming lands, and the progress and condition of agriculture for the year just ended.

Burlington county is divided into twenty-seven townships, and extends from the Delaware river to the Atlantic ocean; its greatest length, northwest and southeast, is about 52 miles; its greatest width, east and west, 31 miles; its area, 551,553 acres, of which 14,137 acres are bays, inlets, &c.

"The whole county is alluvial, composed of sand, gravel, loam and clay, variously blended." A fertile loam composes the most of the soil for from 14 to 20 miles back from the river and nearly parallel with it.

The balance of the county, full one-half its area, six townships and one-half of four others, is a sandy and gravelly district, extending from the loamy section to the sea-shore, 30 to 40 miles in length. Comparatively little of this portion is cultivated, but mainly covered with short growth of brush, oak and pine, the swamps with maple, gum and cedar. Many of these swamps are cleared and set to cranberry vines; the products of this section are pine and cedar timber, whortleberries and cranberries, the bogs of the latter often very productive.

The four townships lying along the Delaware are a sandy loam, but are highly stimulated for the growth of boiling corn, vegetables, fruits and melons for the Philadelphia and New York markets.

The remaining portion of the loamy district, about 16 townships,

is partially underlaid with beds of marl 6 to 15 miles in width, extending northeast and southwest throughout its whole length. Before the era of commercial fertilizers these marls performed wonders in transforming barren sections into Arcadias of production.

The low prices prevailing for most of our staples have placed the balance on the losing side of the ledger, changing the current of production from wheat, pork and kindred staples to those articles which our near-by cities transport with difficulty from distant points.

But these products require more labor, and the machinery of farming is now much hampered by the demoralized condition of the labor market. There seems to be a disjointed condition of things existing.

Nearly all kinds of products, both of the farm and factory, are 20 per cent. lower than in 1860, before the war acted as a disturbing factor. Farm labor is all of 20 per cent. higher, yet all who hire are complaining that it is impossible to obtain sufficient skilled or unskilled help, either in the house or out of doors, to smoothly work the farms. Our political and social economy seems to be educating the youth away from the soil to such an extent that men of means and ability are hard to find to buy or rent farms. Consequently the selling price of land is rapidly falling, and rents correspondingly lessening. If our State Board of Agriculture can devise some way out of this dilemma they will be entitled to perpetual recognition as the saviour of agriculture.

The temperature of the past summer has been fairly favorable for plant growth, but the rain-fall has been almost too small; at critical periods, just enough to squeeze the crop through. The spring and early summer was cool and dry; the late, warm with more moisture. April, May and June furnished too little rain for hay and grass, but sufficient, in most sections, for cultivated crops in their early stages. July increased the rain-fall of the preceding month. August nearly thribbled it, and, coupled with the higher temperature, almost perfected the later crops. The virtually dry month of September, only .35 to .57 of an inch, ripened and gave a fitting finish to the season's growth.

Wheat.—The dry fall of 1884 prevented the seeding of the usual acreage of wheat, also made the preparation of the ground late; the severe winter following found much of the sprouting scarcely through the ground; the result was general winter-killing, and the smallest average crop in 1885 known for years. The acreage about 80 per cent.

But few correspondents in this and other crops give the number of acres sown in each township. The growing winter grain looks well and is very promising.

Corn has been one of our largest crops; being a plant that in May and June does not require much moisture, it found at the different stages of its growth nearly all the conditions requisite for perfect development. Acres that for previous years scarcely yielded, on account of thinness of soil, the expense of farming, seemed this year to swell into fatness, showing that climatic conditions often have more relation to successful plant growth than fertile soils. A slight supply of moisture in the early stages, causes the rootlets to search deep and wide for food, while with plenty of moisture the roots run near the surface, where they become the prey of scorching suns, sudden drouths or quick atmospheric changes. Heavy winds in some sections shortened the crop. Acreage, 22 townships, 120 per cent.; yield, compared to last year, 115 per cent.

Rye has been one of the best crops; the straw and grain both very large and fine; acreage 120 per cent.; yield 100 per cent.; price for grain 60 cents per bushel, straw about \$20 per ton; yield of straw $1\frac{1}{2}$ tons; grain 20 bushels per acre; is becoming one of our most profitable cereal crops.

Hay.—On account of the severe drouths of preceding years, grass all over our county was poorly set; this, coupled with the dry weather of May and June, resulted in the smallest hay crop known for years.

The result reported for 10 townships: millet per acre, two tons; timothy, 19 reports, $1\frac{1}{5}$ tons; clover, 18 reports, $1\frac{1}{6}$ tons per acre. The price has ruled about \$20 per ton. There have been favorable conditions, viz.: moist soils; over two tons per acre were grown, making it a profitable crop to the fortunate possessors.

Pasturage in most districts has been short; the increased moisture of July and August very much improved it, but the dry September reduced it below its normal condition.

The low temperature of spring and early summer was, as it always is, favorable to oat and potato growth.

Sweet potatoes and cabbages both scored rather extra crops; the results of all these are given in the regular forms.

Milk supply large, crowding the market the whole season, the price ranged from three and a half to four cents per quart at Camden and Philadelphia. The cost of getting it there, one-half cent per

quart. An enterprise for bottling it has started at our Station with a good prospect of success.

Pork crop light, cholera decreasing; the low price ruling, \$4 to \$5 per cwt., is inducing the farmers to gradually reduce the number raised and fattened.

CORN.

Yield compared to last year (22 townships)...	115 per cent.
Average yield per acre (23 townships).....	48 bushels.
Number of acres under cultivation (10 townships).....	10,547 acres.
Price per bushel December 1st (21 townships).....	48 cents.

OATS.

Yield compared to last year (18 townships)...	106 per cent.
Average yield per acre (17 townships).....	43 bushels.
Number of acres under cultivation (9 townships).....	2,313 acres.
Price per bushel December 1st (15 townships).....	36 cents.

WHEAT.

Yield compared to last year (22 townships)...	66 per cent.
Average yield per acre (22 townships).....	14 bushels.
Number of acres under cultivation (11 townships).....	7,666 acres.
Price per bushel December 1st (21 townships),	97 cents.

POTATOES.

Yield compared to last year (23 townships)..	90 per cent.
Average yield per acre (21 townships).....	51 barrels.
Number of acres under cultivation (11 townships).....	2,793 acres.
Price per barrel December 1st (19 townships),	\$1.60

SWEET POTATOES.

Yield compared to last year (18 townships)...	100 per cent.
Average yield per acre (15 townships)	40 barrels.
Number of acres under cultivation (11 townships).....	957 acres.
Price per barrel December 1st (17 townships),	\$2.10

CABBAGES.

Yield compared to last year (16 townships)...	133 per cent.
Average yield per acre (14 townships)	3,357 heads.
Number of acres under cultivation (7 townships).....	417 acres.
Price per 100 December 1st (14 townships)...	\$3.37

APPLES.

Crop poor on old trees, good on young ones.	
Yield compared to last year (22 townships)...	64 per cent.
Average yield per acre (12 townships).....	32½ barrels.
Number of acres under cultivation (12 townships)	2,116 acres.
Price per barrel December 1st (17 townships)	\$1.75

PEARS.

Yield compared to last year (16 townships)...	98½ per cent.
Average yield per acre (8 townships).....	92 bushels.
Number of acres under cultivation (8 townships).....	326 acres.
Price per bushel December 1st (10 townships)	\$1.20

PEACHES.

Yield compared to last year (12 townships)...	99 per cent.
Average yield per acre (7 townships)	565 bushels.
Number of acres under cultivation (6 townships)	426 acres.
Price per bushel December 1st (6 townships)	\$1.33

QUINCES.

One orchard only, reported this year, near the Atlantic ocean; yield, 200 bushels, which sold per bushel.....	\$1.50
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GRAPES.

Yield compared to last year (14 townships)...	105 per cent.
Average yield per acre (4 townships).....	2,125 pounds.
Number of acres under cultivation (5 townships)	331½ acres.
Average price per pound received (7 townships).....	4 cents.

STRAWBERRIES.

Yield compared to last year (14 townships)...	56 per cent.
Yield per acre (5 townships).....	390 quarts.
Number of acres under cultivation (6 townships).....	510 acres.
Average price per quart received (12 townships).....	9 cents.

BLACKBERRIES AND RASPBERRIES.

Yield compared to last year (11 townships)...	95 per cent.
Average yield per acre (6 townships).....	683 quarts.
Number of acres under cultivation (6 townships).....	226 acres.
Average price per quart received (10 townships).....	11 cents.

CHERRIES.

Yield compared to last year..... 66 per cent.

CRANBERRIES.

Yield compared to last year..... 175 per cent.

MELONS.

An unusually good crop and sold well.

TOMATOES.

Yield compared to last year..... 100 per cent.

Sugar corn has this year yielded well and sold readily for good prices; an unusual large amount was planted; the average returns about \$50 per acre.

In the printed forms, besides those crops already mentioned, peas, beans, pickles, asparagus, egg plants, seeds, &c., form a large proportion of the products of the townships adjoining the Delaware river, and should be named in future blanks.

These crops were good but prices not entirely satisfactory.

To blanks have received twenty-five responses, and are indebted to the following gentlemen for the same: Thomas J. Beans, Clayton Conrow, Edward Adams, Robert Taylor, Eli Bowker, E. Budd Marter, A. Stokes, George W. Scott, N. P. Todd, S. C. De Cou, Edwin Satterthwaite, Joseph B. Collins, George W. Lundy, Henry C. Lippincott, Joel Wainwright, William Parry, Alfred Budd, Levi Proud, John E. Darnell, Joseph E. Lapp, Edmund Cook, James Lippincott, Jr., David T. Haines, Theodore B. Gaskill, Uriah Borton.

Yield of crops reported to a Committee of the Burlington County Agricultural Society appointed to award premiums for the largest and best yields.

CORN.

	Bushels.
Joel R. Haines, per acre.....	74
Joseph H. Bowne, per acre.....	80 $\frac{7}{12}$
Ridgeway Hancock, per acre.....	85 $\frac{4}{16}$
Albert Haines, green.....	91 $\frac{3}{8}$
J. B. Dunphey, green.....	91 $\frac{3}{8}$
Lyndley Smith, green.....	94 $\frac{1}{2}$
J. Howard Longstreet, green.....	98
S. R. Lippincott, green.....	103
Charles Burtis, green.....	106
Howard Darnell, green.....	108
William Borton, green.....	110 $\frac{5}{12}$

WHEAT.

Charles A. King, Centennial.....	42½
G. W. Leeds, Fultz.....	35
Enoch Dudley, Treadwell.....	34½

CABBAGE.

William B. Lippincott—

6 acres sold for \$1,239.15, an average (per acre) of.... \$206 50

TOMATOES.

Ridgeway Pancoast (3 acres)—

1,890 baskets, or 31½ tons, at \$7.00...	\$220 50
47 " at 25c	11 75
Total.....	\$232 25

400 baskets green ones.

George L. Gillingham—

666 baskets per acre..... \$190 26

POTATOES.

G. W. Leeds—

	Baskets.
Beauty of Hebron, per acre.....	400
Early Rose, "	400
Belle, "	500
White Star, "	500

Joseph E. Lapp, Little Egg Harbor township, 20 acres of corn averaged 75 bushels to the acre.

George Nunn, of Westhampton township, raised 2,180 bushels of corn on 13½ acres of ground, an average of over 82 bushels of shelled corn to the acre.

Asa Haines, of Hartford, N. J., sold from 1½ acre, 1,606 baskets tomatoes, at thirty-five cents per basket, amounting to \$562.10. He thinks he left on ground more than 500 baskets he did not pick; altogether 42 tons, 34 tons per acre.

E. Cook, Burlington, whole crop of wheat averaged 32½ bushels per acre.

REPORT OF JACOB H. LEEDS, SHIPPER OF POULTRY, RANCOCAS,
BURLINGTON COUNTY.

To Henry I. Budd, Mount Holly, N. J.:

RESPECTED FRIEND—In reply to thy request, I submit the annexed accounts of my poultry business and farm crops, viz.: From February 1st, 1885, to February 1st, 1886, my poultry shipments amounted to two hundred and ten thousand pounds; the heaviest shipments being made from December 16th, 1885, up to present writing; the prices paid have averaged a little less than the preceding year, which was partly caused by the markets being unusually well stocked at all times with both fresh and frozen, and with Western poultry, that has been so near equal to ours in quality that many dealers who have been handling Jersey stock bought that in preference to paying from 1 to 3 cents per lb. more for ours. Burlington county poultry raisers, having gained the reputation of sending the best poultry that goes into any market, to hold that reputation will have to use their best judgment in getting their stock in the best possible order before sending to market, and kill none but what is fat and use due care in dressing. Four years ago our poultry brought 40 per cent. more than Western stock; this year it brings but from 1 to 3 cents per lb. more, which is proof positive that they are improving their stock faster than our raisers, and, as regards turkeys, the Western run very uniform in size—from 8 to 12 lbs. each—which sell much more readily than some of our large turkeys. In regards to freight discrimination in favor of the West, our freights from Masonville to New York (about 88 miles) are higher than from Chicago and Indianapolis, Ind., a distance of nearly one thousand miles; and if we cannot do something to regulate this, our farmers, who have to pay three or four times the price for land as their Western competitors, are at their mercy.

REPORT OF CROPS GROWN BY GRANVILLE W. LEEDS, ON FARM OF
JACOB H. LEEDS, IN WESTHAMPTON TOWNSHIP, BURLINGTON CO.

Wheat.—Variety, Fultz; sown October 6th, 1884; quantity sown, $1\frac{5}{8}$ bushels per acre; fertilizer, 600 pounds Allen's nitro-phosphate per acre. On account of hard winter and exposed situation, spots were killed out in the field, which contained $8\frac{1}{4}$ acres, and yielded 289 bushels; yield per acre, 35 bushels.

Potatoes.—Commenced planting last week of April, in rows 2½ feet apart; compost manure used broadcast; Allen's dried and ground fish guano in rows; crop injured somewhat by drouth, which occurred in this locality at the most critical time, particularly for the second earliest and later varieties; quantity 6 acres; yield per acre—

	Baskets.
Early Rose.....	400.
Beauty of Hebron.....	400
Belle.....	500
White Star.....	500

Corn.—Seven acres; variety, golden beauty; sod plowed just prior to planting, which was May 11th, in hills 4 by 4 feet; 200 pounds Allen's dried and ground fish used per acre in the hills, which was spread some, with a little dirt brushed on by dropper; worked principally with cultivator, gang plow used some, but finished with cultivator; yield per acre, 116 bushels shelled corn; measured by weighing one load and averaged.

Silos.—There are now ten silos in our county. Nearly all report satisfactory results. Making more and better milk at less cost than other kinds of feed.

P. Lorillard has perhaps the largest one in the county, which he devotes almost exclusively to the fattening of stock, principally cattle. He averages about 180 head at a time in his stalls. Is very successful in fattening with it, both winter and summer; feeds only corn meal with the ensilage. Has 23 pits, 14x14 feet, 22 feet deep, to fill which requires the crop from about 20 acres.

James Lippincott says: My experience this year with ensilage has given perfect satisfaction; want no better food for milk cows, could not get it if I did. It stands head and shoulders above anything I ever used for making milk, either in quantity or quality, and keeps the cows in a healthy condition.

David Roberts, of Moorestown, writes as follows:

My experience with ensilage, though on rather a moderate scale, has extended over a period of five winters of feeding and has been very satisfactory. It has been a cause of wonderment to me that this system of preserving food for cattle has not been more generally adopted in Burlington county, whereas I know of perhaps only one half dozen within a radius of 10 or 15 miles.

My silo is built of brick, wall 9 inches in thickness, laid in cement

the first few courses ; the dimensions are 12 feet square and 12 feet deep, the whole smoothly plastered with cement. A frame building, 8 feet in height in front and 5 feet back, with shingle roof, rests on the top of the wall, and allows 3 feet in depth more space for filling. The silo is situated adjoining the barn and stables, with one side adjacent to the drive-way into the barn, some 8 feet from the level of the ground, so the barn floor is on a level with the top of the wall of the silo ; we are thus able to set the cutter so that corn falls directly into the pit ; we use a two-horse tread power ; \$150 will cover the cost of building, and I have always felt that it was money well spent. Previous to this winter we fed on an average 15 head of milch cows for four or five months ; are now feeding 25 head. From $2\frac{1}{2}$ to 3 acres of ground sown in Southern white corn, in drills $2\frac{1}{2}$ feet apart, is sufficient to fill it. We have cut the corn various lengths, but believe when the corn stalk is not over one-half inch in diameter that one inch in length is about right, though opinions differ on this point. The corn should be tassled and the ears formed and in milk when cut ; think it better to allow the stalks to dry out some before hauling from the field, as a good deal of dead weight is done away with and the ensilage likely to be sweeter ; we find it is not necessary to fill the silo all at once and in a great hurry, but have sometimes ceased operations for a day or two so as to accomplish other important jobs on the farm at the time ; the corn in the meantime will undergo considerable fermentation ; but if not allowed to proceed too far is believed to be an advantage ; we use a double covering of boards and weight with sand ; generally begin feeding about the first of winter, and feed from one-half to one bushel per day to each cow ; use some corn-meal and bran, and give a small ration of hay daily ; when weather is dry, feed corn-fodder in the yard. We find a very perceptible increase in the daily yield and the quality very much improved ; the last point has been very conclusively proved by the person to whom the milk was shipped in Philadelphia ; his customers, when once beginning the use of the milk, refusing to have any other. The cattle are improved in appearance, have sleek, glossy skins, and look as if they had just come off of grass pasture.

Before we began feeding ensilage we frequently ran short of clover hay in the spring ; since then we have sold hay that we never dared to before, besides keeping double the amount of stock. Many dairy-men in this vicinity feed brewers' grains and consequently have to

make weekly trips to Philadelphia in order to insure a constant supply. I venture the opinion that the cost of the time spent in getting this to their farms would build and fill a good-sized silo with material vastly superior in every respect.

COMPARISON OF WEATHER AND RAIN-FALL AT RANCOCAS—3 YEARS.
REPORTED BY SPENCER HAINES.

METEOROLOGY.—Synopsis of the weather at Rancocas for the month of December, 1883 :

Number of cloudy days	20
Number of days on which storm fell.....	18
Depth of rain.....	2 inches.
Depth of snow.....	13 $\frac{1}{4}$ inches.
Average precipitation for ten years, rain.....	2 $\frac{7}{10}$ inches.
Average precipitation for ten years, snow....	5 $\frac{9}{10}$ inches.
Mean temperature, A. M. and P. M	30°
Mean temperature for ten years.....	30 $\frac{1}{10}$ °
Highest temperature.....	60° on the 8th.
Lowest temperature	4° on the 23d.
Monthly range of temperature	56

There was a solar halo on the 26th, and lightning on the 27th ; prevailing wind, N. W.

Review of the Year 1883.—There were 208 cloudy days in this year, and storm fell on 181 of them, viz.: 127 rain, 34 snow; 10 rain, hail and snow; 2 rain and snow, 6 rain and hail, 2 snow and hail. Depth of rain, 39 $\frac{1}{8}$ inches ; depth of snow, 45 $\frac{1}{2}$ inches. Average precipitation for twenty years—rain, 45 $\frac{3}{10}$ inches. 1865 had the greatest rainfall in that time, 57 $\frac{3}{4}$ inches, and 1874 the least, 35 $\frac{3}{4}$ inches. Average do. of snow, 37 $\frac{7}{10}$ inches ; the greatest fall occurring in 1868, 65 $\frac{1}{2}$ inches, the least in 1878, 11 $\frac{1}{8}$ inches. Total precipitation in the twenty years—of rain, 75 feet 6 inches ; of snow, 62 feet 3 inches. The mean temperature, A. M. and P. M., was 48°. Mean for twenty years, 49 $\frac{1}{2}$ °. Highest temperature for the year, 96° on the 7th and 17th of July. Lowest do., 1° on the 12th of January. Yearly range, 95°. There were twenty-six days that the sun did not appear. Prevailing wind, N. W.

METEOROLOGY.—Synopsis of the weather at Rancocas for December, 1884 :

Number of cloudy days	22
Number of days on which rain fell.....	8

Number of days on which snow fell.....	7
Depth of rain	5 inches.
Depth of snow	8 $\frac{1}{4}$ inches.
Average precipitation of rain for ten years.....	3 inches.
Average precipitation of snow for ten years.....	6 $\frac{7}{10}$ inches.
Mean temperature, A. M. and P. M.....	31 $\frac{1}{2}$ °
Mean temperature for ten years.....	30 $\frac{1}{8}$ °
Lowest temperature.....	3° below zero on 20th.
Highest temperature.....	63° on the 31st.
Monthly range.....	66°
Prevailing wind.....	N. W.

There was lightning on the 15th, solar halo on the 23d and lunar halo on the 20th.

Review of the Year 1884.—Number of cloudy days, 198. Storm fell on 153 of them, as follows: Rain, 116; snow, 17; rain, hail and snow, 5; rain and hail, 3; rain and snow, 11; snow and hail, 1. There were forty-one days on which the sun did not appear. Total precipitation—rain, 39 $\frac{1}{2}$ inches; snow, 28 inches. Average do. for twenty-one years—rain, 45 inches; snow, 35 $\frac{1}{2}$ inches. The year 1868 showed the heaviest snow-fall, 65 $\frac{1}{2}$ inches; and 1878 the least, 11 $\frac{1}{8}$ inches. The heaviest rain-fall occurred in 1865, 57 $\frac{3}{4}$ inches; the least do. in 1874, 35 $\frac{3}{4}$ inches. The mean temperature was 49 $\frac{1}{2}$ °; mean temperature in twenty-one years, 49°. The lowest temperature for 1884 was 3° below zero, December 20th; the highest was 94°, June 19th and 23d; the range for the year, 97°. The lowest temperature in the past twenty-one years was 15° below zero on the 1st of January, 1881, and the highest 102°, on the 7th of September, same year. Prevailing wind, N. W. There was frost in every month during the past year, and lightning in all excepting the first.

METEOROLOGY.—Synopsis of the weather at Rancocas for December, 1885:

Number of cloudy days	16
Number of days on which rain fell	6
Number of days on which snow fell	3
Number of days on which snow and rain fell...	3
Depth of rain	3 inches.
Depth of snow	0 inches.
Average precipitation of rain for ten years.....	3 inches.

Average precipitation of snow for ten years.....	6 $\frac{7}{10}$ inches.
Mean temperature, A. M. and P. M.....	33°
Mean temperature for ten years	30 $\frac{4}{10}$ °
Highest temperature.....	59° on the 23d.
Lowest temperature	8° on the 8th.
Monthly range.....	51°
Prevailing wind.....	N. W.

The mercury fell 12 degrees in five minutes during a snow squall on the 3d. There was a parhelion on the 15th and a paraselene on the 17th.

Review of the Year 1885.—There were 194 cloudy days in the year 1885, on twelve of which the sun did not appear. Storm fell on 164 days, as follows: Rain, 112; snow, 31; rain, hail and snow, 8; rain and hail, 3; snow and rain, 10. Total precipitation—rain, 37 $\frac{1}{16}$ inches; snow, 30 $\frac{1}{2}$ inches. Average precipitation for ten years—rain, 42 inches; snow, 30 inches. The total rain-fall for twenty-one years has been 78 feet 7 inches; of snow, 64 feet 6 inches. The mean temperature, A. M. and P. M., 47 $\frac{1}{2}$ °; mean do. for ten years, 48 $\frac{1}{5}$ °. The lowest temperature was 1° below zero, on the 11th of February; highest do. 98° on the 21st of July. Range of temperature, 99°. Prevailing wind, N. W.

The following excellent report from Thomas J. Beans, of temperature, rain-fall, crops, &c., is so much to the point, I have offered it in its entirety:

TEMPERATURE AND RAIN-FALL FOR 1885.

	TEMPERATURE.			RAIN AND SNOW.		Remarks.
	Max.	Min.	Mean.	Melted snow.		
January.....	55°	4°	28.99°	3 43 in	2.8 in.	{ Frost, 12th; harmed; did not destroy.
February.....	42°	-1°	21.58°	4 23 "	20.75 "	
March.....	63°	6.5°	29.71°	1.08 "	5.0 "	
April.....	85°	27°	49.06°	2.82 "	.....
May.....	89°	37°	59.06°	2.845 "	.....
June.....	96°	55°	69.32°	2.57 "	{ Deadly frost, 23d; close of season.
July.....	99°	60°	74.85°	3.08 "	.....
August.....	93°	52.5°	70.1°	7.165 "	.....
September.....	84°	43°	62.49°	0.57 "	.....
October.....	81°	31°	51.88°	3 48 "	.....
November. ...	72.5°	25°	43.04°	3 77 "	Trace.	
December.....	59.5°	7°	34.56°	3 07 "	.....
For year....	99°	-1°	49.55°	38.11 "	28.55 in.	

The rain-fall for the year was 4.9 inches below mean for 20 years. The rain-fall for the three spring months, 6.74 inches, being 3.63 inches below mean, allowing the breaking up of ground for all crops to be done in the best manner, and as it is not possible to be done during a wet spring. There was 12.86 inches in the heated summer months and 7.82 inches, or 2.66 inches less than mean, for the three autumn months, resulting in the lowest supply of water in the wells and springs that we have had for 22 years. But our county is so bordered and pierced by tidewater and so numerous are permanent streams that the resulting inconvenience is not nearly so serious as it would be in many localities less favored with water-supply.

Between the harmful but not destructive frost of May 12th, and the deadly frost of October 23d, there intervened 164 days for out-of-door growth of tender vegetation.

The year 1885 was coolest of the past 22 years, with the exception of 1875, which differed by only seven-hundredths of a degree in annual mean.

The oats was sown when conditions were better than usual, the coolness of the spring months (being 3.77° below average) was favorable and compensated for the light rain-fall, and made the crop a superior one.

We have seldom planted corn when the ground was in better mechanical condition than last spring. The low temperature retarded its growth during its first stages, but the warmth and generous supply of rain during July and August pushed it rapidly forward and made a heavy crop, that a dry September and its following matured before the deadly frost of October 23d came. There was, however, more of offal corn than in the crop of 1884, which was exceptionally good in that respect. There was less than usual of fodder-wasting autumn winds.

Potatoes.—Not an average crop; quality superior.

Wheat.—Very uneven crop; late sown and exposed; poor, but in most cases better yields than deemed possible in early spring; cool weather favoring.

Apples.—Light crop in many orchards.

Peaches.—Fair crops in many orchards.

Sweet Potatoes.—Heaviest crop that we have been favored with for several years, and quality best.

Thomas J. Beans from two and one-fifth acres sold 1,139 baskets of citrons for \$377.62.

Robert T. Evans (Mt. Laurel) from two and one-half acres (planted three and one-half feet by two and one-quarter feet) sold 12,465 cabbages for \$506.75.

Clayton Conrow, of Cinnaminson township, furnishes the following account of rain-fall, including snow when melted :

			Inches.				Inches.
January	6	.....	1.86	June	4	.....	.10
"	12, 13	.....	.50	"	5	.....	.15
"	15	.....	.58	"	8	.....	.20
"	16	.....	.10	"	16, 17	.....	1.00
"	23, 24	.....	.73	"	28	.....	.53
Total ..			3.27	Total ..			1.98
February	9, 10	.....	1.35	July	4	.....	.24
"	13	.....	.08	"	7	.....	1.14
"	14	.....	.30	"	9	.....	.03
"	15, 16	.....	1.57	"	14	.....	.66
"	18	.....	.15	"	20	.....	.15
"	25	.....	.50	"	26	.....	.38
Total ..			3.95	"	29	.....	1.00
				Total ..			3.60
March	1	.....	.12	August	1	.....	.31
"	27	.....	.01	"	2	.....	.60
"	28, 29	.....	.36	"	3	.....	.59
Total ..			.49	"	3	.....	2.10
April	7, 8	.....	.21	"	7	.....	.05
"	8	.....	.22	"	13	.....	.60
"	15	.....	.11	"	22	.....	.29
"	26	.....	.53	"	23	.....	.06
"	28	.....	.76	"	25	.....	2.32
Total ..			1.83	"	29	.....	.24
May	1	.....	.24	"	30	.....	.10
"	4	.....	.05	Total ..			7.26
"	7, 8	.....	1.52	September	8	.....	.15
"	13	.....	.07	"	9	.....	.13
"	23	.....	.24	"	21	.....	.07
"	26	.....	.11	Total ..			.35
"	31	.....	.66				
Total ..			2.89				

		Inches.			Inches.
October	3	..... .09	November	22	..... 1.12
"	4	..... .13	"	23	..... .19
"	6	..... .47	"	24, 25	..... .21
"	8	..... .02			
"	13	..... 1.34		Total	..... 3.89
"	21	..... .93			
"	29, 30	..... .54	December	5	..... .05
			"	9	..... .86
	Total	..... 3.52	"	13, 14	..... 1.56
			"	31	..... .59
November	1, 2	..... 1.77		Total	..... 3.06
"	8	..... .12			
"	9	..... .48			

Total for year..... 36.09

Year 1884..... 44.41

Year 1883..... 40.16

Total rain-fall for the growing crop months..... 17.91

Rain fell on 79 days of 1884 and 80 days of 1885.

REPORT OF MT. LAUREL FARMERS' CLUB.

The annual meeting of the Mount Laurel Farmers' Club make the following report: They appointed committees and offered first and second premiums for the best fields of corn and potatoes.

They award S. R. Lippincott, of Moorestown, the first premium for corn, yield 120 bushels per acre. Planted second week in May, on sod, four feet apart each way. Cultivated three times with Darnell's marker and Atkinson's corn plow. No manure. Variety, Yellow Dent.

Second premium awarded to Howard Darnell, of Mount Laurel, yield 108 bushels per acre; planted 22d of May, four feet apart each way. Farmed with Randall corn plow while small, and the last plowing with one-horse plows. Gas lime spread on the sod before plowing, and manured in the hill with handful of hen manure and ashes mixed. Variety, Gourd Seed.

They award William Dunn Rogers, of Moorestown, the first premium for one acre of potatoes, yield 250 bushels. Planted in drills, manure and phosphate put in the drill before the potatoes were dropped. Fertilizers used, Collins' Electric and Shoemaker's Swift-Sure.

Second premium to J. R. Evans, of Hartford, for one acre of potatoes, yield 200 bushels. Manure spread broadcast, and fertilizer

applied in the drill. Fertilizers used, Lister's and Shoemaker's Swift-Sure.

Asa Roberts gave account of a wonderful yield of potatoes grown on an old meadow where there had *never* been any manure applied before. The ground was well plowed, and on one acre thirty dollars' worth of stable manure was applied broadcast, and twelve dollars' worth of fertilizers in the drill. On another acre forty-two dollars' worth of fertilizer applied broadcast; yield 250 bushels per acre or nearly the same on each; if any difference, the best where only the commercial fertilizer was used. Kind of fertilizers used, Collins' Electric, Swift-Sure, Mapes' and Lister's. Very little difference in the yield with the different fertilizers.

Enclosed find a statement of crops by our members, nearly correct.

Corn	Full average crop.
Wheat	About two-thirds of a crop.
Oats	Full crop.
Hay	Very light, one-half ton to acre.
Pasture	Short crop.
Potatoes, White.....	Average crop.
Sweet Potatoes	Average crop.
Apples	Light crop and very few for winter.
Pears	Fair crop.
Grapes	Fair crop.
Berries	Few grown, but light crop.

COLUMBUS GRANGE, No. 58, P. OF H.

The farmers have had an up-hill road the past season; with pork selling from \$4.50 to \$5.00 per cwt., wheat 90 to 95 cents per bushel, poultry 10 to 14 cents a pound and other produce at proportionately low figures, there will not be much margin left by 25th of March next to rejoice over.

The committee only report 20 farms, aggregating 2,233 acres; ranging from 34 to 250 acres each, averaging 112 acres. We find on these farms 84 horses, 6 mules, 322 cows and 58 other cattle. The sales from these cows are as follows: Butter, \$1,971; milk, \$11,715; calves, \$2,436; total, \$16,122, averaging \$50 per cow. We find that 7 make butter, 8 sell milk, 6 fat calves, and 11 divided between butter, milk and calves. The average per cow of those who sell milk, is \$62; for those who make butter, \$39.34; for those who fat calves, \$27.37,

showing a difference between milk and butter, to be \$22.66 per cow ; between milk and calves, to be \$34.63 per cow ; between butter and calves, to be \$11.97 per cow. Amount of pork sold, \$3,256 ; 230 hogs kept over. Only four farmers report sheep, worth \$735 ; poultry, \$4,103.

Acres in wheat, 177 ; average, 11 bushels per acre ; rye, 105 acres ; average 13 bushels ; oats, 82 acres ; average 44 bushels ; corn, 365 acres ; average 48 bushels ; hay, 445 acres ; average $1\frac{1}{10}$ tons ; tomatoes, 9 acres ; average \$85 per acre ; potatoes (Irish), 46 acres ; average \$70 per acre, rating at 60 cents per bushel ; sweet potatoes, $5\frac{5}{8}$ acres ; averaging \$143 ; sweet corn, $28\frac{1}{2}$ acres ; average \$35 ; seven report apples, \$612 ; one reports turnips, $\frac{3}{4}$ acre, \$50 ; one reports 2 acres of millet, 5 tons per acre ; two report melons, 2 acres, average \$30 per acre ; $2\frac{1}{2}$ acres cabbage, \$225 ; egg plants, $\frac{1}{8}$ acre, \$20 ; lima beans, $\frac{1}{8}$ acre, \$20 ; three report asparagus, \$237 ; \$75 per acre ; one reports pears, \$43 ; one tobacco, \$500 ; three report small fruit, \$195 ; two report peaches, \$910 ; three report strawberries, \$410 ; one reports pickles, \$38 ; one reports squash, \$40 ; one citrons, \$34. Many members failed to report.

Have made purchases through our co-operative fund to the amount of \$2,075.12, as follows: 153 tons of coal, costing \$752.97 ; timothy seed, \$55.13 ; clover seed, \$387.58 ; potatoes, \$182.25 ; plaster, one car load, \$105, and the balance, \$592.19, in sundries. A large amount purchased in Philadelphia by trade card, of which we have no account. We are fully assured by experience that co-operation and combinations are a success.

Our Grange numbers 54 members, 31 males and 23 females. Meetings once a week, fall and winter ; and once in two weeks, spring and summer, with a very good attendance.

FRANKLIN S. SELLEY,

Chairman Executive Committee.

MOORESTOWN GRANGE, No. 8, P. H.

HARTFORD, N. J., January 25th, 1886.

Henry I. Budd, Sec'y Burlington County Board of Agriculture :

The committee appointed to visit the farms of the members of Moorestown Grange report having visited forty-one farms, consisting of—

Acres of cleared land.....	4,934
Acres of woodland.....	298
Acres of meadow.....	55
Total	5,227
Average number of acres in each farm.....	129
Acres in apple orchards (a poor crop).....	190
Acres in pears (poor crop).....	23½
Peach trees.....	3,200
Acres in strawberries (realizing \$75 per acre).....	50
Acres in currants (realizing \$75 per acre).....	3
Acres in raspberries (realizing \$100 per acre).....	23
Acres in blackberries (realizing \$100 per acre).....	12
Acres in grapes (realizing \$400 per acre).....	8½
Acres in corn (yielding 62 bushels per acre).....	547
Acres in wheat (yielding 25 bushels per acre).....	436
Acres in grass (yielding 1½ tons per acre).....	2,027
Acres in white potatoes (yield per acre 200 bushels).....	183
Sweet potato sprouts (a good crop).....	380,000
Acres in citron (realizing per acre \$125).....	45
Acres in tomatoes (realizing per acre \$175).....	61
Acres in cabbage (realizing per acre \$142 to \$206).....	95
Acres in sugar corn (realizing per acre \$68).....	100
Cows (averaging from \$30 to \$79 per head).....	453
Heifers	73
Horses.....	129
Colts	6
Mules	70
Hogs	394
Sheep	119
Hens kept over (some cholera still prevalent).....	1,400

We find the most profitable crops were grapes, tomatoes and cabbage.

Faternally,

KATE B. LIPPINCOTT,

Secretary.

REPORT OF MEDFORD GRANGE.

We have taken no inventory this year of the amount of land in acres held by each member, nor the amount of each variety of product produced, or the number and variety of animals owned by each one.

Several of our members have exchanged the process of making meat in its variety, for that of producing milk, which is sold at Atlantic City and Philadelphia.

CROP REPORT.

Our township was visited this year with an unusual drouth, continuing very late in the season.

Hay (clover) was 50 per cent. of a crop, with exceptions in some cases of 75 to 90 per cent.

Timothy was short and light, with a few exceptions of fair crop.

Wheat, ranging from 40 to 90 per cent.

Rye, 100 per cent. in grain yield ; straw excellent, with good price.

Oats, 100 per cent., unusually good.

Corn, 90 per cent., affected by severe drouth ; yield more than anticipated.

CROP AND STOCK REPORT.

Buckwheat, but little grown here, good, 85 per cent.

Early potatoes, white, 55 per cent., poor yield, with few exceptions.

Late potatoes, white, 25 per cent., a failure on account of drouth.

Sweet potatoes, yield in cases very poor, unusual (75 per cent.) In others fair to good.

Apples, 85 per cent., good yield, prices low.

Pears, 90 per cent., good, but uneven on surface, as though bitten by a parasite.

Peaches, 80 per cent.; not many grown.

Truck, in variety, 80 per cent.

Cabbage, early, 50 per cent., affected by drouth.

Late to very late, 85 per cent., grown after late rains came.

Celery, late, 90 per cent., grew after late rains.

No pleuro-pneumonia or hog cholera in neighborhood to my knowledge.

Our co-operative association sold in groceries, past year, \$1,641.08, and saved to the members and purchasing fund 22 per cent. Bought 120 tons of coal, three cars of bran, 65 bushels timothy seed, at a saving of \$250.

D. T. HAINES,

Chairman.

MOUNT HOLLY GRANGE.

To the State Board of Agriculture of the State of New Jersey :

Mount Holly Grange, No. 37, has recently added to its membership and has a prospect of a further increase.

By co-operation in buying grass seeds, amounting to about 100 bushels of clover, and nearly the same quantity of timothy, an advantage of quality and price is realized of about 15 or 20 per cent. Other co-operative dealings by the members saved in some articles a greater and in some a less percentage.

The farms in the jurisdiction of this Grange will compare favorably with the farms in any part of the State. While there is some poor land along the south side of the Rancocas creek, there are a great many farms of a superior quality in a very high state of cultivation, owing in a great measure to having marl beds on some, and marl is convenient to all of them, and lime being distributed along the banks of the Rancocas creek and at all the turnouts of the railroads that extend in many directions through the neighborhood.

The crops raised are very diversified, being nearly all varieties of grain, grass, beef, pork, poultry, mutton and lambs. Milk has become one of the greatest market commodities, the use and production of which is increasing faster than any other farm crop.

There is also an increased interest taken in all the fruits and vegetables that are suited to this climate, the market for them being generally remunerative, either for immediate use, as well as at the canning factory and retention houses.

CROSSWICKS GRANGE, No. 61.

Our membership is about the same as last year. I think there is an increasing interest among our members, and evidence of the necessity of organization and co-operation of the farmers to more successfully cope with the money and monopolistic powers of the country. Crops in our vicinity are some better than last year, with much lower prices ; outlook not very encouraging for farmers.

Rancocas and Edgewood Granges make no reports and are not in a flourishing condition.

Pemberton Grange is not very active, but is gradually assuming new life.

Moorestown is the banner Grange and district, either in quality of crops, amount realized from their sale and thoroughness in making up reports.

From her Grange and two of her citizens, we have received most complete records. If all other districts and Granges were to imitate her example, the productions of a most fertile county could be epitomized into an intelligent and instructive shape.

Following this is appended the officers and report of the Burlington County Agricultural Society, one of the most progressive and successful agricultural societies in the United States.

BURLINGTON COUNTY AGRICULTURAL SOCIETY.

OFFICERS AND DIRECTORS FOR 1886.

<i>President</i>	ISAAC FENIMORE.....	Mount Holly.
<i>Vice President</i>	WILLIAM S. TAYLOR.....	Burlington.
<i>Recording Secretary</i>	JOHN B. COLLINS.....	Mount Holly.
<i>Corresponding Secretary</i>	HENRY I. BUDD.....	Mount Holly.
<i>Treasurer</i>	EDWARD B. JONES.....	Mount Holly.

BOARD OF DIRECTORS.

ISAAC FENIMORE.....	Mount Holly.
BENJAMIN F. DEACON.....	Mount Holly.
JOHN B. COLLINS.....	Mount Holly.
WILLIAM S. TAYLOR.....	Burlington.
JOSEPH WILLS.....	Rancocas.
HENRY ELLIS.....	Juliustown.
HENRY I. BUDD.....	Mount Holly.
WILLIAM R. LIPPINCOTT.....	Cinnaminson.
JUDSON C. GASKILL.....	Birmingham.
SAMUEL H. CHAMBERS.....	Mount Holly.
WILLIAM C. PARRY.....	Hainesport.

FINANCE COMMITTEE.

JAMES LIPPINCOTT,

JAMES W. DEACON,

ROBERT B. ENGLE.

EXECUTIVE COMMITTEE.

B. F. DEACON.....	Mount Holly.
JOHN B. COLLINS.....	Mount Holly.
HENRY I. BUDD.....	Mount Holly.
JOSEPH WILLS.....	Rancocas.
SAMUEL H. CHAMBERS.....	Mount Holly.

ANNUAL FAIR, OCTOBER 11TH TO 16TH, 1886.

TREASURER'S REPORT

To the Stockholders of the Burlington County Agricultural Society for the year ending January 9th, 1886 :

RECEIPTS.

Balance on hand at last report	\$169 24
Rent of grounds and pasture.....	163 13
Admissions to grounds.....	15,936 18
Admissions to grand stand.....	1,949 56
Old lumber, hay and straw	97 45
Department of public comfort	465 13
Entrance fee for horses.....	1,787 67
Crossing the ring.....	235 00
Coat and package room.....	55 90
Rent of stands and privileges.. ..	4,217 50
Borrowed on notes.....	4,463 00
Advertising in schedule.	495 00
	<hr/>
	<u>\$30,034 76</u>

DISBURSEMENTS.

Dues to County Board of Agriculture	\$12 00
Dues to Trotting Association	56 00
Water rent.....	35 00
Printing schedules.....	506 30
Telegraphing.	28 69
Fair supplies.....	551 88
Printing.....	1,047 81
Advertising.....	862 11
Freights and express.....	19 93
Postage.....	337 68
Supplies for department public comfort.....	368 85
Music.....	215 00
Repairs.....	823 15
Labor.....	118 12
Detectives.....	96 00
Clerks.....	421 86

Guards	\$686 77
Police	302 00
Salaries	650 00
Supplies for dining-room.....	323 60
Notes paid.....	9,500 00
Interest on notes.....	390 00
Premiums.....	10,996 50
Hay, straw and poultry feed.....	669 43
Balance in Treasurer's hands.....	1,016 10
	<hr/>
	\$30,034 76

In addition to the cash on hand, there is due the Society \$75.75 for advertising in the schedule.

ANNUAL REPORT OF THE BOARD OF DIRECTORS OF THE BURLINGTON COUNTY AGRICULTURAL SOCIETY.

MR. CHAIRMAN AND STOCKHOLDERS OF THE BURLINGTON COUNTY AGRICULTURAL SOCIETY—The rapid flight of time has in the fortieth period of your history brought you together to learn of the past year's doings, and provide managers to administer your trust for another year.

Fortune has guided you above the clouds which cast their lengthening shadows over all forms of industry, and planted you higher than ever upon the mountains of prosperity. Commencing the past year with a debt of about \$5,000, a balance of \$10,000 contracted in making the numerous and varied improvements of the preceding year, we now emerge with a balance in the treasury of about \$1,090.

In conformity with the expressed intentions of our last report, we have done nothing in the way of improvements, except the repairs and changes made necessary by decay and the changing conditions of each exhibition, amounting in the aggregate to \$823.15.

The heavy rain on the opening day of our late fair changed our anticipations of success to gloom, but the clearing weather at the close left us the balance of the week as fine as the most ardent could desire.

The continuation over the following Saturday more than supplied the deficiency of the first day, and left the aggregate result better than any previous year. The admissions for 1884 were 42,982; for 1885 they were 44,436. The amount realized from same in 1884, \$15,212.75; in 1885, \$15,930.18. The receipts from all sources,

except notes, were \$24,174.12 in 1884, and \$25,418.30 in 1885. The general expenses have not varied much from the preceding year; in 1884 they were \$7,159.60; in 1885 they were \$7,455.52. The premiums in 1884 amounted to \$11,118.75; in 1885 to \$10,996.50.

The character and number of our exhibits, although fine and large in other years, this season exceeded all others in number, variety and quality, crowding and causing us to make all kinds of shifts to provide room, and forcing us to reject many for want of space. This shows the absolute necessity, if we wish to grow with our opportunities, of providing a great deal more room. The number of entries was over 6,270—an increase of 1,270.

The amount of our advertising matter is continually increasing. The 8,000 schedules were practically exhausted before the fair commenced. The number in the future should not be less than 10,000. These were supplemented with 9,000 posters, 13,000 trotting slips, 26,000 invitation cards, 60,000 flyers, and many other modes of attracting the population tributary to our grounds. By our vigorous efforts at advertising in Philadelphia, Trenton and Camden, we have in a few years increased the attendance from these places from 1,000 to 10,000.

The newspapers and railroads have generously aided us, and have received corresponding benefits in return, as liberality in the management of public trusts, in the long run, pays all concerned handsomely. The newspapers, especially those in Philadelphia, have manifested great interest in our progress. On each day of our fair they devoted whole columns to the setting forth of our attractions, thus giving us a reputation which continually contributes to our advancement.

The superintendent of our railroads deserves our thanks for his many efforts to make our last fair a success. Being new in his position, he miscalculated in some of his arrangements, but his interest is so lively, he intends all possible measures to further the quick transportation of freight and passengers to and from our grounds. The Pennsylvania Railroad Company is fully impressed with our importance as a permanent source of revenue to them, and consequently is quick to respond to reasonable requests for rates, extensions, favors or improvements that will in the present or future further our prosperity.

The pressure for increased space for the exhibitors, and larger and better accommodations for those interested in the track exercises, induced your management to appoint a committee to visit and investigate the most prominent, best designed buildings and grounds, secure

plans and obtain bids for a grand stand. This they have partly done, without expense to the society. Their movements extended over Monmouth Park, Sheepshead Bay, Rochester, Pittsburg, Chicago, St. Louis, Indianapolis, Louisville, Lexington, Cincinnati and several minor points. At each of these places they saw much that could be utilized for our benefit. But at Sheepshead Bay, Chicago and St. Louis they found concentrated the experience of many years of management and observation. Especially was this the case at St. Louis. Here has been erected the ideal grand stand, located on grounds in harmony with it, as are all their buildings and improvements, making altogether a fitting place for holding the largest and most popular agricultural fair in the United States. At their fair \$50,000 are annually offered in premiums, and a city of 400,000 inhabitants suspends business, closing the stores and schools for one day to visit its unsurpassed exhibits.

As the result of these observations and the calculations of an architect, we believe a grand stand can be erected, 48 by 350 feet, three stories high, with dining-rooms and offices on the first story, and seats for 5,000 to 7,000 persons on the second and third stories, placed 50 to 75 feet from the track, with sloping grass plot between, where thousands could promenade, at a cost of from \$15,000 to \$30,000, according to material used. By moving the present grand stand near to the other show buildings, divesting it of its seats, dividing it into two stories, and adding lean-tos on each side, we can economically make 800 running feet of exhibition space—one hundred more than there is in our present main exhibition building. By adopting this course, we not only largely provide for the growing demands of the exhibitors, and obtain a grand stand that will comfortably seat all who want to rest and see the races, but provide an increased source of revenue, which will in a short time not only pay for its cost of erection, but annually furnish us funds to make all needed improvements and additions to the society's grounds.

This report was accepted and ordered to be filed, without objection.

CAMDEN COUNTY.

CAMDEN COUNTY BOARD OF AGRICULTURE.

OFFICERS FOR 1886.

<i>President</i>	EZRA C. BELL.....	Mount Ephraim.
<i>Vice President</i>	EDWARD S. HUSTON.....	Haddonfield.
<i>Secretary</i>	GEORGE T. HAINES.....	Haddonfield.
<i>Treasurer</i>	J. STOKES COLES.....	Haddonfield.

DIRECTORS.

THEODORE HIDER.....	Blackwood.
JOEL HORNER.....	Merchantville.
E. BURROUGH.....	Merchantville.
S. L. BURROUGH.....	Merchantville.
AMOS E. KAIGHN.....	Ellisburg.

DIRECTORS TO STATE BOARD.

E. BURROUGH.....	Merchantville.
E. S. HUSTON	Haddonfield.

SOCIETY AND CROP REPORT.

BY GEO. T. HAINES.

At the annual meeting of the Board held November 24th, 1885, L. T. Derosse read a report of Dr. Augustus Voelcker, of a committee of the House of Commons of English Parliament, on the potato disease in 1880, showing that the disease is carried on by spores floating through the air as well as by inoculation by atmospheric causes.

He also read one from W. T. Thiston Dyre on the same subject which confirmed the former.

Among the exhibits at the meeting of the Board were two specimens of Early Rose potatoes by L. T. Derosse, weighing two pounds two and a half ounces and two pounds ten and a half

ounces respectively, and also a Globe turnip weighing nine pounds, taken from a crop of 900 bushels per acre.

C. Turnly exhibited a fine specimen of Chrysanthemum, and read an interesting article on flowers, being a florist by occupation.

Joel Clements reports marketing 1,285 baskets of peppers from one acre of ground, for which he received \$225; and from a scant acre and a quarter of squashes 1,100 baskets, receipts \$185; from a scant acre and a half of cabbage, \$203, and from one and a half acres of late tomatoes, \$212.

J. D. Glover reports 486 bushels of wheat from seventeen acres.

J. C. Hollingshead reports twenty-five tons of Globe Mangel Wurtzel sugar beets from one and one-half acres.

N. Barton reports 250 bushels of wheat from eight and one-half acres.

For further report of crops, see statistics, as follows, which, it is to be regretted, are not fuller and more correct, on account of so few responding to the request for information; with thanks to those who did, the following is submitted:

CORN.

Yield compared to last year.....	90 per cent.
Average yield per acre.....	41 bushels.
Number of acres under cultivation, three townships report.....	4,700 acres.
Price per bushel December 1st.....	48 cents.

OATS.

Yield compared to last year.....	95 per cent.
Average yield per acre.....	29 bushels.
Number of acres under cultivation, two townships report.....	200 acres.
Price per bushel December 1st.....	40 cents.

WHEAT.

Yield compared to last year.....	73 per cent.
Average yield per acre.....	16 bushels.
Number of acres under cultivation, three townships.....	2,900 acres.
Price per bushel December 1st.....	96 cents.

POTATOES.

Yield compared to last year.....	66 per cent.
Average yield per acre.....	50 barrels.
Number of acres under cultivation, four townships.....	1,800 acres.
Price per barrel December 1st.....	\$1.37.

SWEET POTATOES.

Yield compared to last year.....	107 per cent.
Average yield per acre.....	44 barrels.
Number of acres under cultivation, four townships.....	1,000 acres.
Price per barrel December 1st.....	\$2.00.

CABBAGES.

Yield compared to last year.....	165 per cent.
Average yield per acre.....	3,000 heads.
Number of acres under cultivation, four townships.....	1,155 acres.
Price per 100 December 1st.....	\$3.00.

APPLES.

Yield compared to last year.....	48 per cent.
Average yield per acre.....	18 barrels.
Number of acres under cultivation, two townships.....	250 acres.
Price per barrel December 1st	\$1.75.

PEARS.

Yield compared to last year.....	106 per cent.
Average yield per acre.....	75 bushels.
Number of acres under cultivation, 2 townships.....	50 acres.
Price per bushel December 1st.....	90 cents.

PEACHES.

Yield compared to last year.....	110 per cent.
Average yield per acre.....	100 bushels.
Number of acres under cultivation, two townships.....	150 acres.
Price per bushel December 1st.....	\$1.00.

GRAPES.

Yield compared to last year.....	100 per cent.
Average yield per acre.....	2,500 pounds.
Number of acres under cultivation, two townships.....	1,000 acres.
Average price per pound received.....	3 cents.

STRAWBERRIES.

Yield compared to last year.....	50 per cent.
Yield per acre.....	1,080 quarts.
Number of acres under cultivation, two townships.....	300 acres.
Average price per quart received, 4 persons report.....	7 cents.

BLACKBERRIES AND RASPBERRIES.

Yield compared to last year.....	86 per cent.
Average yield per acre.....	1,000 quarts.
Number of acres under cultivation, two townships.....	600 acres.
Average price per quart received	6 cents.

MISCELLANEOUS.

Yield of millet hay per acre.....	1 ton.
Yield of clover hay per acre.	1½ tons.
Yield of other hay per acre, timothy.....	1½ tons.
Acreage in wheat compared to last year.....	100 per cent.

Some farmers say that the severe winter damaged the wheat; dry weather shortened the corn crop in some sections, while potatoes were injured by the drouth; but the rains came in time to make a full crop of sweet potatoes. A smaller acreage of cabbage than last year, but the crop was good. The crop of hay was short, but more fodder corn raised than heretofore, which will in a measure make up the deficiency. Peaches are more looked after than formerly; they appear to be growing in favor, many small orchards having been put out last year.

Standard pears are being grown more largely. Grapes and small fruits are cultivated in some sections of the county quite extensively, but sufficient data has not been furnished to make a satisfactory showing.

In regard to contagious diseases of animals it is authoritatively reported that at the present time, January 25th, 1886, there is one herd of cattle in our county affected with contagious pleuro-pneumonia, a second outbreak in the herd having occurred within the past week. There are also a few herds of swine affected with swine plague.

Isolated cases of glanders in horses can be found almost weekly, and it is surprising that there is not more of it when we consider how careless the owners of the animals are with them, allowing them on the public streets and drinking from public troughs, etc.; it is certainly very dangerous, to say the least.

At the annual meeting of the Farmers' Association (a branch of the County Board), held January 28th, 1886, the following resolutions were adopted, viz.:

WHEREAS, There having recently been established large manufactories of oleomargarine, butterine, suine and other substances imitating butter, and being sold as such, it being in fact bogus butter; *and whereas*, legislation in other States to prevent its manufacture has been declared unconstitutional and void, and legislation in this State compelling the package in which it is sold to be marked does not protect the consumer nor the producer of genuine butter;

Resolved, That we hereby urge upon the State Board of Agriculture the formulation of such laws as tend to protect the consumer and producer of

genuine butter from the impositions and frauds of these bogus butter manufacturers; and to this end we would recommend the passage of an act compelling every roll, piece, lump, pound or parcel of each and all of these substances resembling butter to be marked with its true name upon the substance itself; and be it

Resolved, That we hereby request our delegates from the county board of agriculture to present a copy of these resolutions and request action thereon by the State Board of Agriculture.

Also,

WHEREAS, By an act of the Legislature approved March 30th, 1874, the sum of three thousand dollars was appropriated annually to be offered as State premiums under the joint control of the New Jersey State Agricultural Society and the State Board of Agriculture; *and whereas*, under the present system of making up and offering said premiums the people of the State do not receive the full benefit of the money thus expended; therefore, be it

Resolved, That we hereby recommend and urge the State Board of Agriculture to formulate a system of offering the State premiums on the products of the field and garden, whereby the people of the State may be informed of the mode and manner of the cultivation, manuring, marketing and receipts of the successful crops;

Resolved, That the delegates from our county board of agriculture be and are hereby requested to present a copy of these resolutions to the State Board of Agriculture and request action on the same.

CUMBERLAND COUNTY.

CUMBERLAND COUNTY BOARD OF AGRICULTURE.

OFFICERS FOR 1886.

<i>President</i>	MORRIS BACON.	Greenwich.
<i>Secretary</i>	W. O. GARRISON	Bridgeton.
<i>Treasurer</i>	T. F. BAKER.....	Bridgeton.

DIRECTORS.

JOHN TYLER	Greenwich.
JOHN RAINIER	Shiloh.
WINFIELD BONHAM	Shiloh.
SAMUEL TOMLINSON	Roadstown.

The farmers of Cumberland county, though their lot is cast in the much-ridiculed southern part of a State that is said to be out of the Union and about to be annexed to Staten Island, are not ready to admit that they are behind their neighbors in methods of tillage or in material prosperity. Nor will they admit without proof that others surpass them in variety and value of products. Neither do they neglect to meet together to compare methods and discuss such questions as are pertinent to their business.

Almost every community has a Grange, and, in addition, Vineland has a Fair Association and a Floral Society. These hold a yearly fair and make a display that would be creditable to many societies that are more widely advertised.

The Cumberland County Agricultural and Horticultural Society holds its fair annually the first week in September. The attendance is from 12,000 to 16,000 during the two days that it continues.

Being strictly a county fair, the exhibits are limited to the products of the county, yet, at the last exhibition, there were on the tables more than four hundred plates of apples, one hundred and thirty-two plates of pears, sixty-four plates of peaches and large displays of

grapes, quinces and other fruits. The other departments were equally well represented.

The crop of corn was unusually large, probably twenty-five per cent. above the average. Several fields are said to have produced from ninety to one hundred bushels of shelled corn per acre. But as these statements are based on estimates, and not careful weights and measures, I have not used them in this report.

The oat crop was good and the grain heavy. Probably the largest yield in the county was on the farm of Smith Tomlin, at Maurice-town, reported at 78 bushels by measure, weighing 35 pounds per bushel to the acre.

The wheat crop is looked upon as the most unprofitable grown in many years. From the best data at command, the average yield was not above twelve bushels per acre, and the highest reported yield is not quite thirty.

Potatoes were a good crop, and farmers are planting more largely each year. High cultivation and thorough manuring have increased the average crop per acre, until from the township reports the average production is 142 bushels.

Eli Minch reports 1,910 bushels of Silver Lake potatoes, on seven and one-half acres.

Charles Bitters reports 800 bushels on four acres.

John B. Garrison, 2,840 baskets on five and one-half acres; one-twelfth of an acre in the center of the field was carefully measured, and the potatoes weighed $1,633\frac{1}{2}$ pounds, equal to 327 bushels per acre.

Robert Ware had 1,700 bushels from six and one-half acres, and Joseph A. Minch 4,400 bushels from sixteen acres.

Peach-growing is receiving much attention; the greater portion of three townships is well adapted to the production of this most luscious of fruits. So great has been the demand for trees, that there is not a nursery in the county that can fill an order for a thousand peach trees of the popular varieties, and many who intended to plant out orchards this spring must wait until another year for want of stock. It is probably within bounds to say that 2,000 acres were set with trees in November.

Many orchards produced large crops, but few accurate accounts of the product or the receipts were kept.

Mr. Thos. E. Hunt, of Greenwich, picked from a young orchard of nine and one-half acres 2,192 baskets, for which he received \$1,527.51.

F. B. Minch, from two acres of older trees, sold fruit to the amount of \$584.20. Mr. Hepner sold 5,100 baskets from twenty acres; price not reported. There is standing near this orchard a peach tree having a trunk eight feet in circumference, two feet above the ground. There has been sold from this tree \$38 worth of fruit in one year.

The small fruit interest is very large. The railroad companies run special trains during the months of June and July for the accommodation of the strawberry and blackberry growers. It has not been possible to obtain reliable statistics of the crop, but the shipments from Vineland alone amounted to several carloads each day in the height of the season.

The loss from hog disease has been great; probably not less than thirty per cent. of all hogs in the county have died from this cause.

If some remedy, or, better still, preventive, can be made known, it will be worth thousands of dollars to our breeders.

Farming is a business, not simply an occupation, and those farmers who have conducted their farms on progressive business principles are not the ones we hear complaining that farming don't pay.

ESSEX COUNTY.

ESSEX COUNTY BOARD OF AGRICULTURE.

OFFICERS OF THE BOARD FOR 1886.

<i>President</i>	ISAAC S. CRANE.
<i>Vice-President</i>	M. H. CANFIELD.
<i>Secretary</i>	J. H. M. COOK.
<i>Treasurer</i>	AUSTIN E. HEDDEN.

BOARD OF DIRECTORS.

H. T. HARRISON,	J. H. BALDWIN,	C. G. CAMPBELL,
EDWARD WILLIAMS,	A. PRESTON WILLIAMS.	

DELEGATES TO STATE BOARD.

AUSTIN E. HEDDEN,	ISAAC S. CRANE.
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ANNUAL CROP REPORT.

BY J. H. BALDWIN.

As the year 1885 draws to a close, and those engaged in agricultural and horticultural pursuits in the county cast a retrospective glance over the year's work and its results, there will be things brought to mind to gratify them, and there will also be disappointments to consider. The preceding fall and winter were unfavorable to grain. The rain-fall throughout September and October, 1884, was slight, and plowing was put off until an unusually late date. Wheat and rye had made but a meagre growth when the rigors of winter were upon it, and the severity of the weather that followed about destroyed wheat, but rye was not so seriously injured. One thresherman reported in reference to the former, that the crop of one man, in 1844, exceeded that of all those for whom he threshed in 1885, and he does a large amount of work every year.

Spring-grown grain—oats and barley—were very much better. Oats suffered from drouth, and made only short straw, but late rains

filled up the grain, and it was brighter and heavier than it had been for several years. The yield per acre was not as great as common. William Diecks, of Livingston, reports a yield of 35 bushels per acre, but the year previous the same gentleman had 84 bushels. In unfavorable localities, the yield was not more than ten bushels.

The corn crop was exceptionally good; the weather was favorable from planting to harvest, with the exception of one heavy wind-storm, that lodged some and broke down portions in several fields. John J. Farley, of Northfield, reports 210 bushels of Leaming corn on two and one-half acres; and Samuel H. Burnet reports 80 bushels per acre, on one piece containing five acres.

The strawberry crop amounted to about 33 per cent. of an average yield, owing to the severity of the preceding winter. Where there should have been picked 1,200 quarts, only 450 were harvested. Prices ranged from one to two cents lower than in the season of 1884; good fruit netted thirteen cents per quart, and poorer grades from eight to ten cents.

Pears were an average crop, but prices were lower than usual. In the height of the season Bartletts sold for seventy-five cents per basket, while late varieties sold for from \$1 to \$1.25. Bartletts placed in retention houses brought, when sold, from \$1.50 to \$2.25 per basket, according to quality. Four of the largest retention houses in the State are in this county.

The Livingston Grange in the month of September conceived the idea of holding an exhibition of farm products and appointed a committee to make the necessary preparations and also to invite Caldwell Grange to participate. The idea was received with favor by the latter body and a committee was appointed to co-operate with the one from Livingston. The joint committee upon meeting decided to hold the exhibition in Caldwell on September 30th and October 1st, under the auspices of the Essex County Board of Agriculture and the two Granges. Only one week's time was allowed to arrange the details and it was with many misgivings that the committee repaired to the appointed place on the 29th of September to receive the entries and arrange the exhibits. Great was their astonishment then when the exhibits came in so rapidly that it was found impossible to classify them as they should be, and when it was time to open the doors to the public it was found that the exhibits were so numerous and occupied so much room that there was but little space left for spectators.

Only the products of farm and garden, together with such articles

as the taste and skill of the ladies can shape, arrange and fabricate, were shown. Large and cumbersome articles, farm machinery, etc., had to be rejected for want of a place to put them.

The attendance during the two days and evenings was very large. The exhibition building was thronged and the judges found it very difficult to make their way about to examine the goods. By persistent efforts, however, they succeeded and made the awards, giving very general satisfaction. Here it should be said that the exhibition was far more satisfactory, so far as quality was concerned, than any one anticipated and there seemed to be a desire prevalent to have the exhibition repeated in 1886. The Committee, Messrs. Isaac S. Crane, J. H. M. Cook and Rufus F. Harrison, of Livingston Grange; Austen E. Hedden, C. G. Campbell and Milton H. Canfield, of Caldwell Grange, were untiring in their efforts in preparing for and managing the exhibition and merited the praise bestowed upon them for their success by the organizations they represented and those of the public that attended the exhibition. Financially, also, the affair was a success.

Considerable effort has been made to gather crop statistics that would be of interest and value, but the effort has been successful only in a small degree. In truth, but few farmers in this vicinity can tell with accuracy how much land they cultivate or how much is devoted to each crop. When further details are asked for, such as to the quality of manure used, the cost of cultivation and the method of seeding, cultivating and harvesting, only vague, unsatisfactory and confusing answers are received.

In reference to corn, H. Frank Harrison, of Roseland, says for his locality that the yield was seventy-five per cent. as compared with last year and that it amounted to twenty-five bushels per acre. The price per bushel of corn has varied from forty-five to fifty cents. He says the yield of potatoes was not more than sixty-five or seventy per cent. as compared with the preceding year and the quality not as good. Per acre the yield was about 100 bushels, and they have ranged in price from seventy to ninety cents.

Cabbage turned out well. The fall weather was favorable and the growth good.

Apples were a failure. As it was the unproductive year in this vicinity, not much was looked for.

Austen E. Hedden, of Verona, reports for his locality :

Corn.—Yield compared to last year, 115 per cent.; average yield per acre, 40 bushels; number of acres under cultivation, 350; price per bushel December 1st, 55 cents.

Oats.—Yield compared to last year, 100 per cent.; average yield per acre, 35 bushels; number of acres under cultivation, 350; price per bushel 42 cents.

Wheat.—Yield compared to last year, 45 per cent.; average yield per acre, 23 bushels; number of acres under cultivation, 100; price December 1st, \$1 per bushel.

Cabbage.—Yield compared to last year, 120 per cent.; average yield per acre, 3,000 heads; number of acres under cultivation, 50; price per 100 December 1st, \$4.

Apples.—Yield compared to last year, 40 per cent.; price per bbl. December 1st, \$2.50.

Pears.—Yield compared to last year, 120 per cent.

Peaches.—Yield compared to last year, 75 per cent.; number of acres under cultivation, 20.

Strawberries.—Yield compared to last year, 100 per cent.

Blackberries and Raspberries.—Yield compared to last year, 100 per cent.; yield of clover hay per acre, $1\frac{1}{2}$ tons; timothy per acre, 1 ton.

Remarks.—Wheat crop poor. Bad fall for sowing; very little sown.

Isaac S. Crane, of Livingston, reports as follows:

Corn.—Yield compared to last year, 125 per cent.; average yield per acre, 40 bushels (shelled); number of acres under cultivation, 500; price per bushel December 1st, 47 cents.

Oats.—Yield compared to last year, 90 per cent.; average yield per acre, 30 bushels; number of acres under cultivation, 600; price per bushel December 1st, 35 cents.

Wheat.—Yield compared to last year, 30 per cent.; average yield per acre, 5 bushels; number of acres under cultivation, 125; price per bushel December 1st, \$1.

Potatoes.—Yield compared to last year 75 per cent.; average yield per acre, 35 barrels; number of acres under cultivation, 150; price per barrel December 1st, \$1.75.

Cabbage.—Yield compared to last year, 100 per cent.; number of acres under cultivation, 25.

Apples.—Yield compared to last year, 50 per cent.; average yield

per acre, 20 barrels ; number of acres under cultivation, 150 ; price per barrel December 1st, \$1.50.

Pears.—Yield compared to last year, 100 per cent.; average per acre, 20 bushels ; number of acres under cultivation, 25 ; price per bushel December 1st, \$1.

Peaches.—Yield compared to last year, 100 per cent.; average per acre, 30 bushels ; number of acres under cultivation, 50 ; price per bushel December 1st, \$1.50.

Grapes.—Yield compared to last year, 110 per cent.; number of acres under cultivation, 10.

Strawberries.—Yield compared to last year, 80 per cent.; number of acres under cultivation, 10 ; average price per quart, 12 cents.

Blackberries and Raspberries.—Yield compared to last year, 80 per cent.; average price per quart, 10 cents.

Yield of clover hay $1\frac{1}{2}$ tons per acre.

Timothy, $1\frac{1}{4}$ tons per acre.

Drought in May and June cut the hay crop short.

Were it not for the heavy crop of corn-fodder and corn-stalks there would have been suffering from lack of fodder.

In estimating apples, young orchards not bearing are included, reducing the average yield.

REPORT OF LIVINGSTON GRANGE, No. 104.

BY WM. DEECKS.

Livingston Grange reports an active and increasing membership. Meetings are held on alternate Thursday evenings throughout the year ; questions relative to general farming are freely discussed and the experience of individual members given.

Last year's crop reports were favorable with the exception of hay and wheat, the latter being in many cases an entire failure. The yield of corn and potatoes was above the average.

This being a milk-producing district, most of the farmers are heavily stocked and stable manure is made in large quantities ; still the farmers find it pays to supplement the home product and the various commercial fertilizers are freely used. During the year several car-loads of special fertilizers have been purchased on the co-operative plan and mixed by members to suit their several purposes, from which

good results were obtained with considerable saving in price. Co-operation has been found to work well in the purchase of other articles also. It is expected that great benefit will be derived from a series of lectures to be delivered in the Grange this winter by experienced and competent farmers and specialists. Since the inauguration of our Grange in 1879 great improvement is noted in the manner of farming and in the quality and quantity of crops produced. The advantages arising from an interchange of ideas, and the intelligent discussion of various subjects brought before the Grange, are plainly perceptible, and farmers are learning to think better of their calling and of each other. In short, the Grange has come to stay and is doing a good work in the community.

GLOUCESTER COUNTY.

GLOUCESTER COUNTY AGRICULTURAL SOCIETY.

OFFICERS OF THE BOARD FOR 1885.

<i>President</i>	SAMUEL MOORE.....	Harrisonville.
<i>Vice-President</i>	CHALKLEY DUELL.....	Wenonah.
<i>Secretary</i>	GEO. H. GAUNT....	Paulsboro.
<i>Treasurer</i>	THOMAS BORTON.....	Mullica Hill.

BOARD OF DIRECTORS.

FRANK B. RIDGWAY,	ELLISON HORNER,	DAVID S. ADAMS,
WILLIAM E. SHOCK,	ELMER BRADSHAW,	JOSEPH B. ROE,
	BIRDSEL SICKLER.	

DELEGATES TO STATE BOARD.

GEO. H. GAUNT.

FRANK B. RIDGWAY.

Gloucester County Board have held four meetings during the year; first, annual meeting, January 3d; second, July 18th; the State Secretary having kindly promised to be with us and address the meeting, the farmers came out in goodly numbers to hear him, but unfortunately he was so much indisposed that he could not be with us, so the meeting was converted into an experience meeting, and brought out considerable practical information. Third meeting was held at Woodbury, October 31st, when Mr. P. T. Quinn, our State Secretary, was with us, and gave us a very good practical talk, which was much appreciated by the audience. Our fourth meeting was held at Mullica Hill, December 5th, when there were some practical essays read and interesting discussions, showing that farmers are anxious for an advancement in agriculture.

CROP REPORT.

Corn, compared to last year, about 90 per cent.; on account of severe drouth.

Oats, about 100 per cent., compared to last year.

Wheat, compared to last year, about 80 per cent.; badly winter killed.

Early white potatoes, about 80 per cent., compared to last year.

Late white potatoes, very few grown.

Sweet potatoes, yield compared to last year, 130 per cent.; average yield per acre 40 barrels.

Cabbage, yield compared to last year, 140 per cent.; average yield per acre 3,000; price December 1st, about \$2.75 per 100.

Apples, yield compared to last year, not over 25 per cent. Pears, an average crop, 100 per cent. Peaches, very few grown in our county. Grapes, yield compared to last year, about 125 per cent. Strawberries, compared to last year, about 75 per cent. Blackberries and raspberries, very few grown for market.

Yield of millet hay per acre $1\frac{1}{2}$ tons; clover hay per acre $\frac{3}{4}$ ton; timothy hay per acre $1\frac{1}{2}$ tons.

Acreage in wheat, compared to last year, 100 per cent.

Taking it altogether, it has been one of the worst years for farmers that they have experienced for a long time.

HUNTERDON COUNTY.

HUNTERDON COUNTY BOARD OF AGRICULTURE.

OFFICERS OF THE BOARD FOR 1886.

<i>President</i>	JOHN T. COX.....	Readington Grange.
<i>Vice-President</i>	NEWTON B. RITTENHOUSE.....	Sergeantsville Grange.
<i>Secretary</i>	E. M. HEATH.....	Locktown Grange.
<i>Treasurer</i>	JOSEPH WILLIAMSON.....	Sergeantsville Grange.

BOARD OF DIRECTORS.

JAMES LANE.....	Readington Grange.
E. E. HOLCOMB.....	Ringoes Grange.
JOSEPH HAGAMAN.....	Sergeantsville Grange.
URIAH SUTTON.....	Locktown Grange.
JOHN W. LAQUERE.....	Kingwood Grange.
H. F. BODINE.....	Pomona Grange.

DELEGATES TO STATE BOARD.

H. F. BODINE,

J. B. FISHER.

SOCIETIES REPRESENTED.

Readington Grange, Sergeantsville Grange, Ringoes Grange, Locktown Grange, Kingwood Grange, Hunterdon County Pomona Grange.

HUNTERDON COUNTY CROP AND SOCIETY REPORT.

BY H. F. BODINE.

In making this our first report to the State Board, it may be expected that we will not make as good showing as reports from counties that have been organized longer than we. Our County Board was organized November 14th, 1885, by Hunterdon County Pomona Grange, with an invitation to the Hunterdon County Agricultural Society to meet with us in the formation of the County Board. The Society sent a delegation of their stockholders to attend

the meeting, but wanted the assistance of the Agricultural Board in building up their Society, which it was freely admitted was well run down ; but the members of the County Board thought they did not care to place their money and time in building up the old Society, hence their delegation withdrew and left the work of organizing entirely with the Patrons of Husbandry, as will be seen by referring to the Societies represented. Accordingly an organization was effected on the 21st day of November, 1885. The Board met and adopted their by-laws, and we trust effective work for the agriculturists of our county will be accomplished.

There are five subordinate Granges in the county, and it had been our intention to give a report of each one and their doings, but circumstances have been such that we have been unable to come at a uniform system, hence we can only say that we believe all of them are doing well, and if the farmers generally could remove their prejudice and become members of the Grange, an untold amount of good would accrue to them. We have also a Pomona Grange that is doing good work for the agriculturists that are interested in its workings.

The Grange has done much for its members as an educator. They are especially awake to the matter of commercial fertilizers, what they are, how to use them, &c. We hope some time to give a fuller report of the Grange work in our county, as we notice hitherto it has been left unreported.

The yield of wheat throughout the county was not as good this season as for the past few years ; rye crop good ; oats fair ; buckwheat better than for the past five years, bringing the price of flour down to \$2.00 per hundred weight ; corn crop excellent ; potatoes not more than two-thirds of a crop ; hay crop short, but of excellent quality ; apples not more than half crop, but kept well. There are a number of persons engaged in raising small fruits, but it is difficult to get from them either the yield per acre or the amount of money received for their crop. Mr. Asa Fisher sold 800 pounds of dried raspberries at one of the stores a few days ago for 18 cents per pound. These were grown on a very small piece of ground.

There are four creameries in our county, with a capacity of 10,000 pounds each. These are all running and doing fairly well. It is very difficult to gather a correct report of the number of pounds of poultry, pork, &c., produced, as the farmers each send the products of the farms to market and too much time would be consumed in aggregating a report.

We are able to report a fair crop of peaches, though we think the quality not as good as formerly, but yielding the grower fair prices and bringing into our county great sums of money—the acreage being increased yearly. Below I give you the number of baskets shipped from the county as near as can be ascertained. On

Lehigh Valley Railroad.....	202,840
New Jersey Central.....	251,397
Pennsylvania	130,000

It is thought by the best judges that taking into account what was sold in local markets and used in families, a million of baskets is not an exaggerated amount. The industry is a growing one, and the desire to set trees has never been equalled; the nursery trees have all been sold, and growers are unable to get all they need for setting the coming spring.

POMONA GRANGE, No. 3, OF HUNTERDON COUNTY, NEW JERSEY.

OFFICERS FOR 1886.

<i>Master</i>	DAVID BODINE.....	Locktown.
<i>Overseer</i>	JAMES S. KERR	Kingwood.
<i>Lecturer</i>	JOHN T. COX.....	Readington.
<i>Steward</i>	ISAAC H. HOFFMAN.....	Locktown.
<i>Assistant Steward</i>	J. R. HARTPENCE.....	Sergeantsville.
<i>Chaplain</i>	N. B. RITTENHOUSE	Sergeantsville.
<i>Treasurer</i>	URIAH SUTTON	Locktown.
<i>Secretary</i>	F. S. HOLCOMBE	Mount Airy.
<i>Gate Keeper</i>	T. W. SUTTON.....	Kingwood.
<i>Ceres</i>	MRS. EMILY BODINE.....	Locktown.
<i>Pomona</i>	MRS. MARY J. HOFFMAN.....	Locktown.
<i>Flora</i>	MRS. MARY BLACKWELL... ..	Mount Airy.
<i>Lady Ass't Steward</i>	MRS. HANNAH C. HOLCOMBE.....	Mount Airy.

EXECUTIVE COMMITTEE.

PETER HOPPOCK, Locktown.

JOHN T. COX, Readington.

T. W. SUTTON, Kingwood.

E. E. HOLCOMB, Mount Airy.

J. B. FISHER, Sergeantsville.

REPORT OF POMONA GRANGE, No. 3, OF NEW JERSEY.

BY ISAAC H. HOFFMAN.

We have about fifty-three members in good standing in our Grange at this time ; we meet four times in the year, as follows: on the fourth Thursday in January and April and second Thursday in August and third Thursday in October. Our meetings are held in the different subordinate Grange Halls in the county. At the meeting in April, held at the hall of Sergeantsville Grange, No. 101, a committee of five was appointed, one from each subordinate Grange in the county, to collect exhibits from the farm and garden and bring to the August and October meetings. At the meeting held in the hall of Locktown Grange, No. 88, in August, we had quite a fair exhibit, and the committee was requested to do what they could among their members to collect and bring a good exhibit to the next meeting in October, which was held at the hall of Ringoes Grange, No. 12. We had one of the grandest exhibits in point of variety and quality that we have seen in our county in many years, including grain, fruit and vegetables, thus showing what a few farmers could do. We have also bought some seventy-five bushels of clover seed through our agent, Judge Holcombe.

REPORT OF F. S. HOLCOMBE, MOUNT AIRY, AND BENJAMIN E. TINE,
STANTON, DELEGATES FROM THE HUNTERDON COUNTY AGRICULTURAL SOCIETY.

We herewith present to the State Board of Agriculture a general summary of agricultural interest of crops of grain, fruit, pork, poultry, vegetables and a few manufacturing establishments in the county for the past year.

One of the leading products of the soil of this county is fruit, and the leading fruit in dollars and cents is peaches.

The farmers over the entire county are engaged in the cultivation of peaches, in connection with their other farm industries, and some farmers make them a specialty.

The past season, while not entirely satisfactory to the growers, was fairly good. The quality of the fruit was not up to the usual standard of Hunterdon county peaches, occasioned by cold, wet weather in the early part of the season, causing the leaves to blight, followed by dry

weather, which was in turn followed by heavy rains and winds, doing great damage by loosening the ground around the trees in the orchards, blowing off the half-grown peaches, blowing over and twisting loose the trees; this was followed by unseasonably cold weather in August, checking the growth of peaches. Notwithstanding all these drawbacks, the crop, in the number of baskets produced, was considerably in excess of the previous year; but, owing to the inferior quality, the average price was not as good, entailing on the growers more work in handling without receiving any more money. The crop in round numbers will amount to over 850,000 baskets, netting the growers \$500,000 or more. In the lower end of the county, through the kindness of John A. Anderson, Superintendent of the Belvidere Division, we are furnished with a copy of baskets shipped upon that road from the different stations:

Holland	889
Milford.....	3,697
Frenchtown	12,793
Tumble.....	6,364
Byram.....	10
Bulls Island.....	33,817
Stockton	35,617
Lambertville.....	13,771
Ringoes	8,227
Total	115,185

Some five or six cars of peaches were shipped direct from Lambertville to Cincinnati, Ohio, affording a good market for the farmers.

Apples.—In the northern part of the county, the apple crop was the poorest in several years, in quantity and quality of fruit, and the fruit rotted badly; in the southern part of the county the crop was better, but the whole county would not average one-half of a crop. The most productive variety is Smith's cider apple. Some orchards set lately, are nearly all cider apples.

Small Fruits.—Considerable attention is being paid to the cultivation of small fruits, such as strawberries, raspberries, blackberries, currants, cherries, plums, &c.; the plum crop being the largest for many years. The cultivation of these small fruits has proved quite profitable; most of the fruit finds ready sale in the local markets of the county; northern part to Easton; southern to Flemington, Lam-

bertville, Stockton, Ringoes, &c. The cultivators of these small fruits are scattered all over the county, and the number is increasing yearly, and yet there is a demand for all. Asa H. Fisher sold 800 pounds dried raspberries for 18 cents a pound, making \$144. Thomas Hunt, of Lambertville; C. Hunt, Stockton; Mrs. William Drake, Mrs. D. Bellis, the Everitts, near Flemington, and a great many others whose names are not known, are all large producers.

Dairy.—Another leading industry in our county is dairying. In addition to butter made on the farms, a great deal of milk and cream is shipped to New York, and during the season to different summer resorts along the sea-shore. The daily shipments will average 2,000 quarts. There are in the county eight creameries, shipping milk and cream, that buy an average of 15,000 quarts per day, and four factories making butter and cheese, that receive an average of 4,000 pounds each per day.

Wheat.—The crop was below the average, caused mainly by the unfavorable weather of winter and spring; a few fields in favorable localities yielding as high as 30 bushels per acre, while the average will not reach over 15 bushels per acre; selling at the present time at 90 cents per bushel. Jonathan Hunt, near Ringoes, raised 400 bushels of wheat, averaging 20 or more bushels to the acre; and about 1,000 bushels of oats. He believes in fertilizers for oats. Several farmers are trying phosphates on their oats crop, and find it pays them.

Rye.—The crop of rye was very good according to the acreage, but the splendid yield of wheat the previous year induced the farmers to plant a large acreage of wheat in the fall of 1884, and correspondingly small acreage of rye, to the loss of the farmers as the outcome has shown; selling at this time at 56 cents per bushel.

Corn.—A splendid crop of corn was raised except where damaged by the cyclones the first of August, and by local drouth in the southern part of the county, averaging from 30 to 80 bushels per acre according to quality of soil and cultivation, although some by extra farming, planting in rows with drill or new corn planters, obtained from 100 to 120 bushels per acre. Some very profitable crops of sweet corn have been have raised in southern portion for the Lambertville and other markets. Clark Hunt, of Stockton, and Thomas Hunt, of Lambertville, being the largest growers, having early, medium and late planting. A good many farmers plant from one-

half acre to two acres for the Lambertville, Flemington, Clinton and other markets in the county. And also find it quite profitable to raise for early pork.

Oats.—The yield of oats was fairly good, but damaged some in gathering by the wet weather. Selling from 28 to 32 cents per bushel at home markets.

Buckwheat.—There is considerable buckwheat grown in the county, being sown quite extensively in young peach orchards, and more than usual this year on account of the failure of wheat in some localities, and the large number of new peach orchards set last spring. The crop was generally good, the largest for several years, some farmers plowing up their stubble fields where the grass failed, and raising from 200 to 600 bushels, yielding from 20 to 40 bushels to the acre. Selling at 50 cents per bushel.

Flax and Barley.—This county formerly produced large quantities of flax, but at the present time the acreage is small; the yield the past season was fair. Barley not as much raised as formerly, but on good soil is more profitable than oats.

Hay.—The crop of hay was one of the smallest gathered in the county for a number of years, resulting in high prices—as much as \$20 per ton being paid in the fields; average not more than $1\frac{1}{4}$ tons per acre.

Potatoes.—But few sweet potatoes planted, some farmers raising enough for their own use, while white potatoes, early, were excellent in quantity and quality; some very late planting was a small crop, owing to drouth, but the crop was a fair average, selling now at 50 cents.

Cabbage.—Cabbage is more grown every year for home consumption, and the year 1885 was the largest for a number of years, many selling for $1\frac{1}{2}$ to 5 cents per head for winter use, and a large quantity unsold at freezing time for want of purchasers, very plainly showing our law makers at Washington the necessity of protecting the agricultural interests of the United States, in the raw material as well as the manufactured article, for the farmer produces the raw material that enters into all manufactured goods of every kind.

Tomatoes.—Tomatoes in the southern portion of the county, within a radius of six or eight miles of Lambertville, are raised quite extensively for manufacturing purposes. There is but one canning factory in the county, where there ought to be several. The one in Lambert-

ville, carried on by J. H. Butterfoss, is doing an extensive business. He has put up the past season 242,000 cans ; made 850 barrels of catsup ; bought 22,000 bushels ; paid for labor in the factory \$3,212 ; total sales \$23,000 ; giving employment in the height of the season to from 75 to 100 hands daily, the largest portion females, enabling them to earn in five or six weeks enough money to help them through the winter, and perhaps keeping them from being helped by the city. Our county line extends pretty well up towards Easton. Many farmers make it a business to raise tomatoes, cabbage, sweet corn, early potatoes, pickles and the small fruits, along the Delaware and ship by the Belvidere Railroad to Easton, Belvidere, Scranton, Wilkesbarre, Water Gap, Williamsport, and some to the different watering-places. The people of Hunterdon county must have all the luxuries of the season as they come, and at least \$100,000 is spent annually for the early vegetables brought from the South, and then from the lower counties of the State before ours come to perfection. The farmer, as well as those in the villages, procure these luxuries, and why not ? They are the "bone and sinew of the country."

Live Stock.—The live stock of the county is being gradually improved by the introduction and careful selection of improved breeds.

Horses.—Considerable attention is given to the raising of horses, and several very good stallions are kept for service, both trotting and draught horses. Among the latter several imported Percherons, and all good animals of either kind find ready sale when well broken and of sufficient age to do full work. Many are also brought here from Canada and the Western States and sold to the farmers, who use them until they are put in condition for city work, when they are sold for that purpose, bringing high prices.

Cattle.—The largest portion of the cattle are milch cows, used in the dairies ; they consist mostly of grades from the various improved breeds. Where whole milk is shipped, animals showing Holstein, Shorthorn and Ayrshire blood are preferred. When butter and cream is the principal product of the dairy, Jerseys, Guernseys and Devons are in favor. The cattle are mostly brought from other localities as springers, or with young calves, and sold to the dairymen, who usually keep them about one year, until they are milked out and ready for beef, bringing at the present time $3\frac{1}{2}$ cents per pound, gross. Formerly a great many steers were fed, but this industry decreases as dairying increases, farmers not being able to compete with the Western

States. The steers were bought in Pennsylvania and New York when from six months to two years old, and sold to the farmers, who feed them until two and three years old, when they are mostly disposed of to local butchers; the price for January being $4\frac{1}{2}$ to 5 cents per pound, live weight.

Calves.—Calves, except thoroughbreds and high grades, are nearly all sold for veals, and find a ready market in New York, Newark, Elizabeth, Trenton and local towns; very seldom any going to Philadelphia. They have net the farmer for the last five months from $6\frac{1}{2}$ to $8\frac{1}{2}$ cents per pound, delivered at the railroad station.

Sheep.—The keeping of sheep for the raising of lambs for the New York market is growing more and more every year, and is one of the principal and profitable features of the agricultural industries of the farmers of our county who are engaged in it. Most of the lambs were bought by the dealers the past season at prices bringing \$4.50 to \$5.50 per head. Some farmers who had their ewes to breed very early lambs and took extra care of their flocks, had their lambs sold in New York from \$7 to \$10 per head. The ewes used for breeding market lambs are cross-bred sheep brought from the West. They are usually bred to a thoroughbred Southdown buck. Several flocks of thoroughbred Southdowns are kept in the county, and their owners have a ready market for their buck lambs among the market lamb raisers. The owners of the Southdown flocks are: L. A. Exton, Clinton; J. and P. Rockafellow, Lebanon; J. D. and M. Smith, Sunnyside; Charles Hoff, Centerville; and F. S. Holcombe, Mount Airy. Following we send you report of Jonathan Higgins' sheep for 1885: He bought 52 sheep in the Fall of 1884 for \$216; the lambs were not early; sold 48 for \$290.49, 8 for \$38, and 10 for \$43.50; total, \$361.99; sold 51 sheep for \$272.35; wool—200 pounds—\$52; total, \$686.34; net profits, \$470.34. I could give others not so good, and a good many much better, who sold early lambs for \$10 in the sheep pen.

Swine.—The leading breeds among the swine raisers in the county are Poland, China, Berkshire and Jersey Reds; but nearly all other improved breeds have their representatives and advocates. The most of the pork is marketed as pig pork from six to nine months old. Prices have been very low the past four months, netting from 4 cents for coarse heavy to $6\frac{1}{2}$ for fancy light.

Poultry.—Considerable attention is being paid by farmers and

others to raising poultry for the early market; most of them in the old-fashioned way of setting the hens, while not a few are using artificial means, incubators, building warm roosts, and taking better care of their fowls in cold winter weather; some farmers feeding three times a day the year round for the purpose of gathering in the golden eggs, thinking it pays better than raising chickens.

Turkeys.—Turkeys are generally raised at a profit if well attended to; farmers, for Thanksgiving, getting from home dealers 14 to 16 cents; for Christmas, 13 to 15 cents per pound; while those shipping to New York for the Christmas market received about 10 cents per pound net.

To more clearly show the agricultural interests of our county we herewith append a few reports of what different individuals have done in the various industries. J. W. Duckworth, Pattenburg, N. J., sends his report of peaches, as follows: Planted trees fifteen feet square, and planted 1,465 trees; the year that they were three years old gathered 700 baskets, net gain \$585; fourth year 1,000 baskets, net gain \$1,050; fifth year 3,400 baskets, net gain \$1,700; sixth year 2,400 baskets, net gain \$1,300; seventh year 1,900 baskets, net gain \$1,200; eighth year sold them on the trees in the orchard for \$600. He also sends the following: "Two years used barnyard manure broadcast; for two years used Lister Brothers' ammoniated dissolved bone—about one ton each season. The other years of bearing did not use anything." His orchard contains a little less than eight acres of ground. The amount realized from the orchard is \$6,435; this income was derived principally from six varieties—eleven varieties were planted out. There are others in the county who have had great success in raising and selling their peaches for fancy prices but will not give figures.

William H. Fulper, one of our enterprising merchants of Flemington, sends the following: He has received since September 1st, 1885, 76,212 pounds pork; 50,200 pounds poultry; 12,050 pounds of dried fruit. Bought during the year ending February 1st, 785,930 eggs. Sold the past season 90,500 peach baskets and covers.

Another enterprising firm, Richards & Sutphin, sends the following: Since November 1st, 1885, to February 1st, 1886, received 33,750 pounds of poultry; 8,000 pounds dried fruits; 65,000 pounds dressed hogs. During August and September sold 43,000 peach baskets and covers; and during the year of 1885 bought 150,000 eggs.

Nevius & Connet have handled over \$50,000 worth of produce in 1885.

Hunterdon county is perhaps the largest peach-growing county in the State. Peach men have bought all the trees in the nurseries already; the demand is greater than the supply, and the question of the day is, Can we have too many?

The greatest need of an agricultural community is to have more manufacturing interests established in our county. As it is a well-established fact that the Eastern farmer cannot compete with the Western farmer in the raising of grain and meat, the Eastern farmer, to be successful, must confine himself to the production of such articles as cannot be raised in the West or that will not bear transportation for long distances, and the nearer the market for such articles can be brought to the farmer the more his profit will be, and the only way to create a home market is to have a well-established manufacturing population. To the establishment of such industries we have the following inducements to offer: A diversity of production capable of furnishing food to a large population at a moderate price; abundant water-power, proximity to the coal fields of Pennsylvania, affording cheap fuel; nearness to the tide-water, and abundant railroad facilities, affording cheap transportation for raw material and the finished products of the factory.

The society held their annual fair September 22d, 23d and 24th. On account of threatening and cold wintry weather the first two days, the attendance was small. The last day, with better weather, brought a good attendance. The exhibition was well filled in all of the departments, and was successful except financially.

Receipts from all sources were.....	\$5,792 51
Disbursements.....	5,730 35
	<hr/>
Balance in hand.....	\$62 16

HUNTERDON COUNTY AGRICULTURAL SOCIETY.

OFFICERS FOR THE YEAR 1886.

<i>President</i>	JONATHAN HIGGINS.
<i>Vice President</i>	JOHN L. JONES.
<i>Recording Secretary</i>	JOHN L. CONNET.
<i>Corresponding Secretary</i>	WILLARD C. PARKER.
<i>Treasurer</i>	JOHN H. DEMOTT.

BOARD OF DIRECTORS.

F. S. HOLCOMBE,
SIMPSON S. STOUT,

J. B. HOPEWELL,
HIRAM MOORE,
DAVID D. SCHOMP.

JOSEPH HAINES,
B. E. TINE,

MERCER COUNTY.

MERCER COUNTY BOARD OF AGRICULTURE.

OFFICERS OF THE BOARD FOR 1886.

<i>President</i>	RALPH EGE.
<i>Vice President</i>	THEO. CUBBERLEY.
<i>Corresponding Secretary</i>	FRANKLIN DYE.
<i>Treasurer</i>	CHARLES H. OLDEN.
<i>Recording Secretary</i>	J. M. DALRYMPLE.
<i>Superintendent of Fair</i>	FRANKLIN DE COU.

BOARD OF DIRECTORS.

JAMES A. HENDRICKSON.....	Ewing Grange.
A. L. HOLCOMBE	Hopewell Farmers' Club.
WILLIAM VAN PELT.....	Mercer Grange.
JOHN F. PHILLIPS	Princeton Agr'l Ass'n.
J. B. HORN.....	Pennington Grange.
G. W. JOHNSTON.....	Lawrence Grange.
FRANKLIN DE COU.....	Hamilton Agr'l Ass'n.
WILLIAM S. RIGGS.....	East Windsor Agr'l Ass'n.
P. A. CUBBERLEY.....	Hamilton Grange.

SOCIETY AND CROP REPORT.

BY FRANKLIN DYE.

It is asserted that "man learns by failure." If this is true one would suppose the tillers of the soil were possessed of a vast amount of knowledge. Trial succeeds trial, experiment follows experiment, the last attempt frequently succeeding no better than the one that preceded it; as soon as one difficulty is overcome another is met that baffles even scientific skill; and this process goes on through the years and from generation to generation. Has no progress, then, been made? The history of agriculture for the last fifty years will give a satisfactory answer. If the farmer, the market gardener and

the fruit-grower have not learned by failure they have learned in spite of it.

One reason for renewed experiments in farming operations is to discover some method in stock and crop raising, by which the cost of production may be reduced and the profits increased; a system whereby more profitable returns can be realized for labor and capital invested.

A second reason is found in the increasing and diversified enemies to success in agriculture, consisting of adverse climatic influences, and new and increasing depredations of insects. The latter are found to exist in so many forms, and to have their modes of attack so hidden as to defy the skill and even the notice of the ordinary farmer until the mischief is done. A third obstacle in the way to success, and one that claims our serious attention as farmers, is the scarcity of efficient farm laborers. Farmers living near to our manufacturing centers find that the American young men that were once their strong-arm in carrying on farm work, are leaving the farm and seeking employment where wages are higher, or work more respectable (?). In this county we are restricted to the few colored men the brick manufacturers do not employ, and the unskilled Hungarian and other foreign laborers. It may be said in reply, pay higher wages! In most cases farmers are paying as much as they can afford, and if a true estimate of farm wages and the work required, with the wages paid by other industries for the work done, with the necessary expenses to the workingman in each case, could be made, I believe that it would be seen that the farmer is paying as much as the other employers. In other words, the expenses for living to the laboring man and his family, are greater in other trades than on the farm; these deducted from the amount left will not vary much in either case. Of course, this does not apply to the labor of the artist.

The Hon. Wm. Walter Phelps, in his address before this Board two years ago, stated "that each person engaged in farm work in New Jersey, in 1879, earned \$500, being more than \$100 more than is earned by any such labor in any other State in the Union." He also stated that "one advantage of the system of protection is, it increases the number of those who leave the ranks of agriculture and engage in other pursuits."

In seeming contradiction to the first extract above stated, and as resulting from the second, the report of the National Bureau of

Statistics, issued the past year, states that "farm labor is very unpopular in New Jersey, owing very largely to the fact that other industries pay better wages than farming; hence, there is a scarcity of farm labor in the State which is considered deplorable." The "system of protection," which in Mr. Phelps' view is (to be) "advantageous to agriculture," is, in the view of the Bureau named, producing "deplorable" fruit. Now, if farm laborers receive more in New Jersey than in any other State, why is labor on the farm more unpopular here than in other States? It is not the farm labor so much that is unpopular, but the larger wages paid by other industries that is popular. The bait takes the fish.

The advantages that accrue to agriculture from protection by attracting to other callings those engaged in it, are not so apparent as we could wish. There are advantages to agriculture from protection; with those we are not now dealing. The difficulty has been and is, that while we were building up our manufacturing industries, unwarranted inducements have been presented to foreign immigration so that for every place made vacant on farms in the East by manufacturing, scores of immigrants, from continental Europe especially, have found homes in the West, occupying and tilling its rich productive soil. Transportation facilities have increased with the population and even anticipated the produce to be removed, thereby adding to the crops of the older States the enormous yields of the new, produced at a much less cost than we can possibly grow them; so that with all the manufactories in operation among us we are driven to the wall.

A remedy for existing evils, to some extent at least, is suggested in three particulars:

First. Stop forever land monopoly; we do not want the English system of land ownership in this country.

Second. Freight charges on our through lines should be so regulated by law that discrimination against short distances should not be so great as it is; and this, perhaps, will be better accomplished by State than by Congressional legislation.

Third. Is not that system of protection unfair that is of itself a sufficient inducement to attract a man from one into another calling? Such a system places the producer second to and to a degree dependent on the manufacturer and the middle-man. This fact is virtually conceded by Mr. Phelps, proved by the investigations of the Bureau

and corroborated in the experience of our farmers to-day. A remedy will not be found, however, by returning to free trade, but rather in so adjusting the tariff as to favor, as far as may be possible, the producer and the manufacturer alike; in so regulating it that not protection but preference shall determine in the choice of a calling. It will not be well for manufacturers and protectionists to antagonize the farmers' interests in the adjustment of the tariff.

Let us now return to the report of the Bureau of Statistics. The gentlemen composing the Bureau institute a comparison between the prices paid on the farm in 1866 and in 1885, as follows, as taken from the *Trenton Times* :

"FARM LABOR IN JERSEY.—The wages of farm labor in New Jersey is shown in a report just issued by the National Bureau of Statistics, based on observations made from 1866 up to the present year. During the year 1866 farm laborers in New Jersey received an average salary of \$32.27 per month without board and \$18.98 per month with board. During the year 1885 the monthly salary without board in the State was \$23.60 and with board \$14.10, which shows a marked decrease since the former year, owing, doubtless, to the frequent business depressions. In harvest the wages in New Jersey during 1866 averaged \$2.68 per day without board and \$2.38 with board, while in 1885 the rate decreased to \$2.04 per day without board and \$1.65 with board. The day wages of ordinary farm labor in New Jersey in 1866 was \$1.68 without board and \$1.20 with board. The rate in 1885 was \$1.17 per day without board and \$0.83 with board. The report mentions the fact that farm labor is very unpopular in New Jersey, owing very largely to the fact that other industries pay better wages than farming, hence there is a scarcity of farm labor in the State which is considered deplorable."

These differences seem to be considerable, and if placed before workmen as stated (if the above is a fair extract of the report), will convey a wrong impression, for no comparison of the cost of living in 1866 and in 1885 is made as it affected the laboring man, nor of the prices of farm crops, then and now, from which the farmer must meet his obligations. To pay \$32.27 without, and \$18.98 with board, in 1866, the farmer sold his wheat at \$2.85 and \$3.00 per bushel; his corn and potatoes, at 70 cents; his oats, at 50 cents; his apples at \$2.40 per barrel; his pork for 17 cents per pound, and so on; while to pay \$23.60 without, and \$14.10 with board, in 1885, he can realize only 90 cents to \$1.00 for his wheat (and in this crop we have the anomaly of a poor crop and a low price occurring at the same

time); 40 cents for corn, 50 cents for potatoes, 35 cents for oats, \$1.25 per barrel for apples, $4\frac{3}{4}$ to 5 cents per pound for his pork; without going through the whole list of farm produce, it will be seen that the farmer was as able to pay the higher wages of 1866, as he is the smaller amount in 1885.

Again, the workingman paid for the necessities of life, in 1886; for coffee, 50 cents per pound, 25 cents now; tea, \$2.00 and up, 50 cents now; sugar, 15 to 20 cents, $7\frac{1}{2}$ now; molasses, \$1.25 to \$1.50, 70 cents now; chocolate, 70 cents, 44 cents now; 64 cents for ginger, 30 cents now; 25 cents for cheese, 16 cents now; 15 cents for starch, 10 cents now; for flour \$6.00 to \$8.00 per hundred, \$2.50 to \$4.00 now; 50 cents for butter, 30 cents now; 28 cents for ham, $12\frac{1}{2}$ cents now; 25 cents for lard, 10 cents now; 50 cents for vinegar, 25 cents now; for luxuries like tobacco, \$1.00 per pound. For wearing apparel, I only give a few articles, as calico, 25 cents then, 5 cents now; muslin, 30 cents, $7\frac{1}{2}$ cents now; drilling, 50 cents, 10 cents now; gingham, 40 to 60 cents, 8 cents now; cambric, 20 cents, 12 cents now; alpaca, 90 cents to \$1.70, 35 cents now; linen bosom, 50 cents, 25 cents now; spool cotton, 8 cents, 5 cents now; Kentucky jean, 60 cents, 25 cents now; brooms, 65 cents, 25 cents now; and other things in proportion all through the grocery, provision and dry goods list. That is, the workingman with his one-fourth to one-third higher wages, in 1866, had to pay from half to five times as much for the necessities of life as he did in 1885. From all this it will appear that the farmer is paying more wages, an amount that will go further for living purposes now, than was paid in 1866.

The statements of the Bureau, unaccompanied by any of the facts named, do injustice to the farmer, and will help to make farm labor more unpopular and the situation more deplorable in our State than it now is.

The report for the county will be given by townships as follows:

Lawrence Township has a soil composed largely of clay and gravel loam, on which the yield as compared to last year has been: Corn, 100; a heavy shower of rain and hail, accompanied with high wind, during the first of August, injured the crop in portions of the township, as did the wire-worm also in the spring, destroying the seed for three consecutive plantings; yield per acre, 60 bushels; price, December 1st, 40 cents; oats, wheat, etc. (see table at close of this report). Pears, peaches, grapes, strawberries, blackberries and raspberries not ex-

tensively grown, but where grown the crop is below last year's. Timothy hay in some cases yielded a ton per acre ; in others, the majority, only a half ton was realized, owing to cold spring and want of rain in early part of summer. The potato crop was greatly injured in some cases by the wire-worm and the scab. In my own potato tests, with 18 varieties, the Early Rose, White Elephant, State of Maine and Blush were the heaviest yielders, planted April 25th-27th. As early as July 1st the wire-worms were found perforating the tubers of the earlier varieties ; such general havoc from the pests named I have never before experienced nor seen ; out of 14 varieties, planted on the above dates, none escaped serious injury, while the Burbank and St. Patrick, planted ten days later, were unharmed. The treatment of all was the same as to planting and cultivation ; different fertilizers were used. While one of my neighbors, a large potato grower, had a similar experience to my own, two others, Thomas Allen and G. W. Johnston, report a yield of 300 bushels per acre. Mr. Allen states that 600 pounds of fertilizer alone produced more and smoother potatoes per acre than 400 pounds of fertilizer used in conjunction with stable manure, the manure applied broad-cast and plowed in.

Sugar beets, mangels and rutabagas not extensively grown ; our farmers judge them not profitable to grow for feed, except in a small way as a change of diet. I. B. Stevens has grown carrots for a series of years successfully, realizing 40 cents per bushel.

Pear trees, especially Bartlett, have been killed by pear-blight, and some, both pear and apple trees, were stung in the fall of 1884 by the "pigeon tremex," all which died above the wound. Sheep are kept by but few farmers. Of hogs only a small surplus over that required for home use finds its way to the city markets. The dairy interest, covering as it does nearly the whole township, claims the pasture, the hay and the grain.

Some farmers continue to raise horses, and when we consider the prices at which horses are held, it would seem to be economy to grow more and buy less. The same is measurably true of cows. A strong inducement for raising our own, breeding only from the best and improving our herds thereby, instead of buying stock out of droves coming from we know not where, is, we will longer if not altogether escape the contagious diseases so prevalent in many sections. I know of no case of infectious disease in this township among horses, cattle or hogs.

Lawrence Creamery is in active operation during the summer season ; the cream is extracted by the centrifugal process.

Lawrence Grange, No. 40, is in working order and has held its meetings regularly, though its numbers have been sadly depleted by the death of many prominent and useful members, and the removal of others.

Ewing Township has, in the main, a fine responsive soil, giving a good return for liberal manuring and thorough cultivation. Along the Delaware river the soil is a sandy loam, changing to clay loam, red clay and, to some extent, red shale in the north. This is a productive township and has so many able, enterprising farmers in it who do not believe in being second to any other man in the same business, its agricultural, horticultural, stock and poultry interests are in a flourishing condition. Here, as in Lawrence, the dairy is receiving more attention. Numbers of farmers supply families in the city of Trenton with butter, serving it weekly at the door ; others convey the milk to the city daily, retailing it at 6 cents per quart in summer and at 8 cents in winter. William Hough has started in connection with his farming operations poultry raising by the incubator process. He reports the business not so well under way as to give a just statement of profit and loss ; believes the expenditures will overbalance the receipts thus far.

Wallace Lanning reports an experiment in corn-growing accurately made on three equal plots of ground. The rows in each case were $3\frac{1}{2}$ feet apart. On the first plot the kernels were planted one every 15 inches in the row ; yield of first plot, $89\frac{5}{6}$ bushels. The second plot was planted two kernels, $2\frac{1}{2}$ feet apart, in the row ; yield of second plot, $95\frac{2}{3}$ bushels. The third plot was planted three kernels in one place, $3\frac{1}{2}$ feet apart, in the row ; yield, $95\frac{5}{6}$ bushels.

The Ewing Grange is active and useful, with a substantial membership. Its meetings are held regularly. The Ewingville Driving Park Association, located at the village of Ewingville, has a superior track for developing the speed of the fine stock raised in the surrounding country. During the past year the Association held a fair and made a trial of speed witnessed by a large attendance of visitors. No detailed report of entries has been given.

Ewing crop report, by John V. Green. (See table, pages 330 and 331.)

Passing northward to *Hopewell Township*, we have a soil of red clay and shale until above Pennington where, while the shale is

retained somewhat, the soil changes to sandy grit. Portions of this township near Pennington were affected by dry weather during the past summer. Just when the grass and oat crops, leading ones of this section, needed rain a severe drouth prevailed which shortened the hay crop to such an extent that little if any will be sold. Corn held its own till fall rains came to its aid. S. B. Ketcham, who makes the crop report for Hopewell township south of and around Pennington, states: "The failure of both wheat and hay will cause great embarrassment to many farmers who are heavily mortgaged. Owing to protracted drouth the young grass in wheat and rye is more than half killed, making the outlook for hay crop the next year very unpromising. Several of our farmers are giving more attention to dairying—shipping the milk by the Bound Brook Railroad to Philadelphia."

Hopewell is a large township, and its farmers believe in organization. The Pennington Grange is transacting business of a co-operative character of much benefit to the members. Its meetings are held in Pennington. In the town of Hopewell is located Mercer Grange; its meetings are continued with interest and the business arm of the order sustained. For such farmers as are not associated in the Grange the Hopewell Farmers' Club, which has attained a history of great usefulness, affords opportunity for discussing farm topics which is appreciated by its members. The Secretary, J. M. Dalrymple, who makes the crop report for this township north of Pennington, writes:

"The breeding and raising of road horses is an important matter for the farmer, but is very much neglected. Many farmers in this section have discovered that the crossing of pure blood in the common herd of cattle for dairy purposes is of vast importance.

"Sheep husbandry is not general; a few farmers have been successful in the business, and have realized large profits therefrom.

"The shipments from Hopewell station of sheep, lambs and calves from July 1st, 1885, to January 1st, 1886, was 3,557 head.

"A growing interest is manifested in the improvement of swine. One member reports weight of heaviest hog, 630 pounds; another, 616 pounds. A very large increase in production is shown by shipments made. One dealer, R. Savidge, of Mount Rose, two miles from Hopewell, shipped 20 tons; another, 5 tons; with individual shipments estimated at 5 tons. Of poultry 60 tons were shipped. The shipments of fruit from Hopewell from July 1st, 1885, to January 1st,

1886, were 23,380 baskets peaches, 700 baskets apples, and 200 baskets pears ; and from Moore's station 553 baskets peaches, 2,187 baskets pears and 690 baskets apples. From Titusville 1,329 baskets peaches, 333 baskets pears and 1,860 baskets apples. Many baskets of peaches, pears and apples were taken to other stations out of the county.

"The amount of fertilizer used by the farmers amounts to over \$65,000. One dealer, R. Savidge, selling near 1,500 tons.

"One member of the Club reports the sale of products off of 75 acres of land as follows: 425 bushels of wheat, 700 bushels of shelled corn, 200 bushels oats, \$400 worth of pork, \$100 worth of hay and \$1,500 worth of stock."

The crop report for Hopewell is as follows:

South, by S. B. Ketcham; North, by J. M. Dalrymple. Mr. Dalrymple gives detailed statements of his experiments in growing corn and wheat with different fertilizers under direction of the State Experiment Station. This report should be studied in connection with the one made last year. (See report of State Board for 1884-'85, page 428). It will be seen, by reference to these figures, that nitrate of soda and superphosphate, at a cost of \$9.75 per acre, produced $4\frac{1}{2}$ bushels more wheat than did \$30 worth of stable manure per acre; and nitrate of soda and muriate of potash on corn, costing \$7.64 per acre, produced $7\frac{1}{2}$ bushels more than did \$30 worth of stable manure.

FIELD EXPERIMENTS WITH FERTILIZER ON CORN, 1885.

BY J. M. DALRYMPLE, HOPEWELL, N. J.

Number of Plot.	KIND OF FERTILIZER.	Amount Fertilizer per Lot.	Cost of Fertilizer.	YIELD PER ACRE.			
				Good Corn, Pounds.	Poor Corn, Pounds.	Total Weight, Stalks.	Measured Bushels, Shelled Corn.
1	Nothing.....			1,250	1,150	5,750	34.20
2	Nitrate of Soda.....	150	\$4 32	1,950	1,000	3,850	42 10
3	Superphosphate.....	350	5 26	4,200	710	5,100	70.10
4	Muriate of Potash.....	150	3 32	3,000	1,130	4,950	59.
5	{ Nitrate of Soda.....	150	\$4 32 } 9 58	2,550	1,180	5,660	53.20
	{ Superphosphate.....	350					
6	Nothing.....			1,480	990	4,900	35.20
7	{ Nitrate of Soda.....	150	4 32 } 7 64	4,600	950	4,850	79.20
	{ Muriate of Potash.....	150					
8	{ Superphosphate.....	350	5 26 } 8 58	3,750	980	5,660	67.40
	{ Muriate of Potash.....	150					
9	{ Nitrate of Soda.....	150	4 32 } 12 90	3,250	1,060	5,280	61.40
	{ Superphosphate.....	350					
	{ Muriate of Potash.....	150	3 32 }				
10	Plaster.....	400	1 50	1,550	1,060	4,650	37.20
11	Fine Barn-yard Manure...	20 loads.	30 00	4,200	820	5,300	71.50

Variety of corn planted, Cloud's Early Dent. Planted in rows $3\frac{1}{2}$ feet wide, one grain every 14 to 18 inches in row.

Soil, red shale. High, gently sloping to southeast.

Texture and character of surface-soil, loose.

Character of sub-soil, red shale and small stone.

Soil best suited to raising rye.

Remarks as to condition, previous cropping, tillage, &c. In 1884 wheat crop taken off. Grass did not take. When land was plowed for corn it looked like a barren field, no sod.

Sowed two-thirds of the fertilizers designated for each lot broadcast, and harrowed them in. After the corn was up and showed nicely in the row, put the balance, one-third, of fertilizer, mixed with three times its bulk of mellow earth, and applied it about the hills.

Practiced level culture with spring-tooth cultivator, except at close of season, when I plowed to the row once.

Date of harvesting, September 19th, cut up the corn.

October 20th and 21st, husked the corn and weighed it.

FIELD EXPERIMENTS WITH FERTILIZERS ON WHEAT, 1885.

BY J. M. DALRYMPLE, HOPEWELL, N. J.

Number of Plot.	KIND OF FERTILIZER.	Amount of Fertilizer, Pounds.	Cost of Fertilizer.	Grain, Pounds.	Straw, Pounds.	Weight of Grain and Straw, Pounds.	Measured, Bushels.
1	Nothing.....			360	490	850	6.
2	Nitrate of Soda.....	150	\$4 50	400	650	1,050	6 40
3	Superphosphate.....	350	5 25	740	710	1,450	12.20
4	Muriate of Potash.....	150	3 38	310	140	450	5.10
5	{ Nitrate of Soda.....	150 }	9 75	1,020	1,130	2,150	17.
	{ Superphosphate.....	350 }					
6	Nothing.....			390	260	650	6.30
7	{ Nitrate of Soda.....	150 }	7 88	500	500	1,000	8.20
	{ Muriate of Potash.....	150 }					
8	{ Superphosphate.....	350 }	8 63	770	860	1,630	12.50
	{ Muriate of Potash.....	150 }					
9	{ Nitrate of Soda.....	150 }	13 13	770	650	1,450	12.50
	{ Superphosphate.....	350 }					
	{ Muriate of Potash.....	150 }					
10	Plaster.....	400	1 50	310	40	350	5.10
11	Barn-yard Manure.....	20 loads.	30 00	760	1,240	2,000	12 40

Variety of wheat sown, Mediterranean.

Amount sown per acre, one bushel and three pecks.

Sown with drill and fertilizers applied at same time.

Date of sowing, October 15th, 1884.

Date of harvesting, July 11th, 1885.

Soil, situation and drainage, red shale, high, gently sloping to south.

Texture and character of surface-soil, loose.

Character of sub-soil, shale.

Soil is best suited for corn, wheat, oats and potatoes.

As to condition, previous cropping, tillage, &c., in 1883 and 1884, good crops of corn were grown on this land.

Weather, during experiment, not favorable. Poor crops in this section. Some farmers in spring plowed up their wheat fields, and planted them with other crops, on account of the poor stand of wheat.

I have endeavored to get from the nurserymen and florists of the county a statement of the business done by each, to present with this report; some have responded, others have not. The following is from

Blackwell Brothers, Titusville: "We have at present about five acres of nursery stock, growing a little, of considerable variety, including peaches, apples, pears, plums, etc.; evergreen and deciduous trees in variety. Smith's Cider is the leading apple; about 90 per cent. of our sales being of this variety; of peaches, Old Mixon Free, Moore's Favorite, and Crawford's Late.

Have shipped as far west as Nebraska, south to Texas, north to Massachusetts and Canada. Have not kept an account of sales lately, as we have been doing only a local trade; our business is apple growing more than trees; harvested about 5,000 bushels this year, 1885; about one-half going to the cider press.

The nursery trade is good only for fruit trees at present, ornamental planting being very limited. Have shipped an average of 800 Christmas trees to Philadelphia the last five years."

Princeton Township has a strong, productive soil, of varying character. Its bottom lands, especially along Stony brook, have been long noted for their large yield of natural grass, affording the best of pasture throughout the summer, and this is true along the course of this stream through Hopewell township.

William Y. Johnson reports 12 acres sown to rye:

Yield of grain 386 bushels, 33 lbs., @ 58 cents.....	\$226 49
Yield of 17 tons of straw @ \$11.00	188 98
Total.....	\$415 45
Average yield per acre, cash	\$34 62
Average yield per acre, rye.....	32½ bushels.
Average yield per acre, straw.....	1½ tons.

The Princeton Agricultural Association, the oldest of its class in the county, maintains its meetings; its Secretary, H. E. Hale, makes the following crop report. (See table, pages 330 and 331.)

From James Van Deventer, who has been in the nursery and fruit business for twenty-five years, the following is received: "The varieties of pears we find most profitable for market are Beurre Gifford, Clapp's Favorite, Bartlett, Seckel, Beurre Bosc and Beurre D'Anjou. There are other varieties valuable for family use. Plums and cherries do not do well with us and are not much grown, although they are doing better now than for some years past. The most popular varieties of apples are Rhode Island Greening, Baldwin, Smith's

Cider and Nero. There are kinds without number in bearing of local name and fame."

Mr. Hale states he has realized the past year from an orchard of $2\frac{1}{2}$ acres of apples of different varieties, a profit of \$50 per acre; trees standing in sod 21 years old; of pears of different varieties, 65 bushels per acre; sales, \$40; from a flock of 100 Black Leghorn chickens, 8,000 eggs; sold at a profit of \$1 for each fowl.

Passing eastward to *West Windsor Township*, we have a gravel loam soil devoted to mixed farming the township over. Some of the finest farms in the county are found in the vicinity of Dutch Neck. Land that forty years ago was thrown out to the commons has been brought, by the use of Squankum marl first, and, of recent years, the better grades of fertilizers, to a high state of fertility. Its heavy crops of hay, corn, wheat and oats are sold largely in Trenton. Local dealers also, located on the Pennsylvania Railroad, handle a portion of the crops named, besides the poultry and pork product of the township, shipping to Newark and New York markets.

T. D. Brokaw, of Dutch Neck, gives the following crop report. (See table, pages 330 and 331.)

East Windsor Township comprises the eastern part of the county. Its soil is gravel and sand loam. The growing borough of Hightstown is its capital. A population constantly increasing, with educational facilities for a large number of students, and manufacturing in various branches affords a home market for much of the produce grown in the township.

Since the last meeting of this Board the West Windsor Township Agricultural Society has been organized and much benefit it is hoped will be derived by its members from its proceedings. It has a membership of twenty-one. H. H. Riggs gives a statement of sales from an average flock of 150 head of Light Brahmas, Partridge Cochins, R. C. B. Leghorns, Plymouth Rocks and Wyandottes; for 4,529 eggs sold, \$98.97, and for chicks sold, \$318.49. A large per cent. of eggs sold were from thoroughbred stock for hatching chicks for breeders.

The nursery business carried on in this township is large. The firm of Charles Black & Brother, of the Village Nurseries, report as follows: No. of acres, 100; capital invested, \$25,000; No. of men employed, 15; sales annually, \$15,000. Kind of stock raised: all hardy fruit and ornamental trees, small fruits, plants and vines. Our heaviest sales are of peach trees and Wilson's early blackberry

plants. We send stock to nearly every State in the Union. Sell largely in New Jersey, Delaware, Maryland, Virginia, Georgia and Alabama. No traveling agents are connected with the firm. In connection with the above they have grown during the past year six acres of wheat, ten of rye, ten of corn, five of potatoes, two of tomatoes, two of cabbage, two of water and muskmelon, six of raspberries and strawberries, two of grapes, ten of apples and five of pears. The two latter are in sod, the apple orchard being pastured. Principal pests to apples, coddling moth; to pears, curculio; to grapes, rot and mildew; strawberries almost a failure owing to severe winter; selling price of raspberries eleven cents per quart. Pie plant thirty cents per per bunch.

There are several others engaged in the nursery business in the township from whom no report has been received.

William S. Riggs presents the following crop report. (See table, pages 330 and 331.)

Washington Township has a gravel and clay loam inclined to yellow clay subsoil, in some sections requiring thorough underdraining to produce paying crops; but with a good soil naturally, underdraining will pay as well as a good coat of manure on poor land requiring no underdraining, and be far more lasting in its effects.

Since the opening of the Pemberton and Mt. Holly Railroad a few years ago, marl has been brought continuously into the township, by which, with better methods and more thorough cultivation, the yield and quality of her crops has been greatly increased.

The leading crops are corn, oats, rye, hay, wheat and potatoes, about in the order named. Some farmers are turning their attention to small fruits and peach growing, excellent transportation facilities for which are afforded from Windsor, its capital, on the Pennsylvania Railroad, southern division, to New York and Philadelphia.

No crop report has been sent from this township. In neither Washington nor West Windsor townships is there a farmers' organization, which is to be regretted.

Hamilton Township has a soil in some parts well adapted to grain and grass, which is produced largely in the neighborhood of Hamilton Square, its capital. The western half of the township lying east and south of Trenton and Chambersburg has a sand and gravel loam soil, suited to early vegetables and small fruits; to the production of these, principally for the Trenton market, the farmers are giving their attention. One farmer from this section, Isaac De Cou, reports as

having under cultivation the past year 4 acres of rye, 20 of corn, 2 of white potatoes, 10 of sweet potatoes, 8 of asparagus, 4 of tomatoes, 4 of watermelons, 25 of strawberries, 3 of apples and one-half acre of Bartlett pears. In connection with these, 100 head of Leghorn chickens are kept, from which, besides the eggs, 1,000 pounds of poultry were sold at 12 cents per pound; 20 geese, from which a profit of \$1.00 per head was realized.

Forty acres are devoted to grass for the accommodation of 35 head of cattle, which, while they afford diversion from berry-picking, have realized to their owner a profit of \$15 per head. Theodore Cubberley, of Hamilton Square, states a profit of \$273.61 from 6 cows devoted to fattening calves.

Peach growing is slowly coming to the front again in different parts of the county where it has been abandoned in the past. The large orchard of Messrs. Mount, Brother & Burke, near Mercerville, containing 9,000 trees, now in its third year of bearing, produced the past season 10,000 baskets, which sold at an average price of 70 cents per basket.

Hamilton has two farmers' organizations, Hamilton Grange and Hamilton Agricultural Association. The former is located at Hamilton Square, has a good membership and is active in various ways to benefit not only its members, but farmers generally.

The latter organization is located near Chambersburg, and has gained since it was organized, nearly two years ago, a history of earnest, good work among the farmers and fruit-growers of that section. Its President, Franklin De Cou, was the very efficient superintendent of the fair held by our Board last October.

The following crop reports are given for East Hamilton by Theodore Cubberley. (See table, pages 330 and 331.)

A number years ago Carlman Ribsam began in a small way the growing of plants, flowers, shrubs, etc., for the Trenton market. By the energy and skill of the owner, his business has grown with the city. His grounds, which were then on the Trenton commons almost, are now, though still in the same place, located on State and Wall streets, and the firm name is C. Ribsam & Son. They report 15 green-houses and 11 cold-frames, covered by 30,000 square feet of glass, under which are grown tropical, bedding and blooming plants for Trenton and vicinity. Sold the past season nearly 150,000 bedding and 5,000 tropical and blooming plants, besides retaining under glass

for cut flowers for the use of wedding parties, and for funeral decorations, about 30,000 blooming plants, which are furnished in such designs as may be required.

For heating the above, brick flues and hot water boilers are used, which require 135 tons of coal. Seven men are required here annually—12 to 14 in the spring. Recently they have added to their facilities for production 55 acres situated on Greenwood and Hamilton avenues. Here are three propagating hot-houses and four cold-frames, covered by 4,000 feet of glass. The stock here will exceed 500,000 plants, consisting of fruit, shade and evergreen trees; shrubs, blooming and ornamental; grape vines, small fruits and roots, of which the best standard, leading sorts adapted to this latitude are kept. Twelve men are here employed.

In connection with their flower garden and nursery, they have a commodious seed and implement store, located at No. 10 South Greene street, Trenton, where fresh and reliable field, vegetable and flower seeds may be obtained, also farm implements and garden tools and ornaments for the house and lawn. An annual catalogue is issued, which is forwarded to all applicants.

The Pomona County Grange is in active operation. Its meetings are held in different parts of the county, four times in each year. The Secretary, G. W. Johnston, gives the amount of purchases, for fertilizers chiefly, between \$6,000 and \$7,000.

The Mercer County Board of Agriculture holds on its way in the line of work for which it was organized. Four regular and two special meetings have been held during the year. At the regular meetings, current subjects connected with farm operations are discussed by the members, embracing stock breeding, feeds and feeding, poultry raising, manures and their application, best fruits and how to grow them, most approved variety of grain and methods of planting and cultivation, bee culture, improved machinery, and humbugs.

At the February meeting, a very instructive address was made by J. H. M. Cooke, of Caldwell, N. J., on "Bee-keeping for farmers." At the August meeting, William R. Ward, of Newark, delivered an address to the Board, on "Fruit culture for the family and market;" he spoke in respect to soil, culture, insect enemies and remedies in fruit culture; giving also suggestions on "cold storage."

At the November meeting, it was the privilege of the Board to listen to Dr. E. M. Hunt, on "Farm animals and their care." The

information gained by our members on the general care of stock, so as to preserve health, prevent and cure disease, and how to detect and what to do in contagious diseases, was timely and of great value. A feature connected with our June meeting, is the estimated yield of farm crops, which is followed by a report at the November meeting as to the actual yield. It is a satisfaction to know that the estimates in the several townships the past year were nearly, and in several instances exactly, in accord with the actual. A special meeting was held January 19th, 1886, at which a highly instructive address was made by P. F. Jacobs, editor of the *Poultry Keeper*, on "Outlines of poultry raising."

At the August meeting the subject of holding a fair and agricultural exhibit was discussed. Some of the members thought it in the line of our purpose and work as a Board of Agriculture to have an exhibit of stock, farm produce, &c., setting forth the results of farm work and, also, the most improved machines, displays of handiwork and merchandise, and to have at close of fair a joint stock sale. The enterprise was purely experimental and had several discouragements to meet and overcome in order to succeed. In the first place, the fair held here some twenty years ago seems not to have been conducted in such a way as to encourage men of means to invest in another enterprise of like character. Second, we did not have a stock company to secure us against financial failure. Third, the time to work up an interest in the movement was too short; about five weeks from the time it was decided to hold the fair was all the time the committee had to form and mature their plans. Fourth, want of experience. Fifth, and to crown all, when all was ready, stormy weather. But, notwithstanding all discouragements, the fair was a success. The public seemed to sympathize with us; even in the constant rain of the second day 1,500 persons were present, and on the next—which was not quite so wet overhead—6,000, and so on to the close of the exhibit. A number of the merchants of Trenton made fine displays of their goods. Machine men were there with their best machinery in great variety. The Messrs. Ribsam & Son and Wainwright, of Trenton, florists and nurserymen, made displays of flowers and plants, cut flowers and floral designs of superior excellence and artistic beauty. In needle and fancy work a varied and large display was made, as also in the culinary department, doing great credit to the lady exhibitors. A department of curiosities, ancient

and modern, attracted the lovers of relic treasures. The fruit display was second to none made in the State. It was grand in its magnitude, its variety, its perfection and beauty; and the same may be said of the vegetables. A good exhibit of grain of different kinds and of poultry of various breeds was also made. A variety of corn, exhibited by P. V. D. Voorhees, of Hopewell, is worthy of mention; he has been experimenting to produce a variety of shorter growth of stalks and superior productiveness, and has succeeded. This corn is well worthy of extended introduction.

For advertising the fair an edition of 5,000 copies of our premium list was published and widely distributed. Merchants, manufacturers, hotel proprietors and others advertised in this schedule liberally. There were printed 1,200 large posters, and advertisements were inserted in the local papers and in a number of others not published in the county. The Pennsylvania Railroad issued small posters and offered excursion rates to and from the fair, and liberal reductions on freight shipped for exhibition. It is but just to say that Thursday, the day our friends would have availed themselves of excursion rates, was stormy throughout. The Chairman of our Board of Directors, who was not enthusiastic in the movement to hold a fair, made a report to a meeting of the Board held January 19th, of which the following is an extract: "Situated as we are, the presumption has long been maintained that we were more of a manufacturing and mechanical community rather than agricultural. Consequently grave doubts have taken possession of the minds of many whether an agricultural exhibit could be successfully held. Everything in this line being new and experimental, no permanent basis of estimates could be obtained, all must depend upon the committee having the matter in charge, and the work must be entered into with that indefatigable zeal, assiduity and practical application so requisite to success. More than your Executive Committee dared to hope for has been realized. The whole community have declared themselves satisfied with the exhibit and all the arrangements connected therewith in all the departments, so much so that we feel constrained to congratulate the organization on the great ends so obtained."

We do not wish to burden your report with every detail of the fair. A brief statement of the entries in the several departments is given by the Recording Secretary, J. M. Dalrymple, as follows:

Depart- ment.	No. of head.
A. Horses.....	32
B. Cattle.....	30
C. Sheep and swine	18
	No. of entries.
D. Poultry and fur-bearing pets.....	60
E. Fruits.....	289
F. Vegetables.....	202
G. Grain, seeds and flour.....	133
H. Flowers and plants.....	39
I. Farming implements and machinery.....	31
I. Domestic implements.....	159
J. Bread, cake, preserves and dairy products.....	89
K. Fancy work, needle work, &c.....	256
Miscellaneous.....	50

Financially, we ended the fair as we began it. We have no debt, which is more, perhaps, than the managers of some more pretentious exhibitions can say. To the citizens of Trenton, who added attractions to the grounds by the mercantile, manufacturing, mechanical and floral displays made by them; to the press, which indorsed and advertised the fair; to the Pennsylvania Railroad Company, for reduced rates, and to all who, in any way, aided the enterprise, we extend our sincere thanks.

A summary of the crop reports from the townships is: Yield compared to last year—Corn, 100 to 130; yield, 40 to 65 bushels per acre; price, December 1st, 40 and 45 cents. Oats, 70 to 125; yield per acre, 30 to 40 bushels; price, 32 and 35 cents. Wheat, 33 to 75; yield per acre, 10 to 12 bushels; price, 95 cents and \$1.00.

Potatoes, all the way from 50 to 100; yield per acre, 50 to 100 barrels; price, \$1.25 to \$1.75 per barrel.

Cabbages, 75 to 200; yield per acre, 2,000 to 4,000; price, \$3.50 to \$5.00 per hundred.

Apples, 50 to 150; yield, 10 to 50 barrels; price, \$1.25 to \$2.00 per barrel.

Pears, 100 to 200; yield, 100 to 250 bushels.

Peaches, 40 to 120; yield, 150 to 200 baskets per acre; price, 50 to 75 cents per basket.

Grapes, 100 to 150; price, 2 to 5 cents per pound.

Strawberries, 25 to 100; yield per acre, 1,000 to 1,500 quarts; price per quart, 8 to 10 cents.

Blackberries and raspberries, 25 to 105 ; yield per acre, 1,000 quarts ; price, 8 to 12 cents.

Timothy hay—yield from 1 ton to $1\frac{1}{2}$ tons per acre ; price, \$16 to \$20 per ton.

Clover hay—yield from $\frac{1}{2}$ ton to $1\frac{1}{2}$ tons per acre. The largest yield of corn per acre is in Ewing and Lawrence—65 bushels per acre. The highest oat yield is in South Hopewell—40 bushels per acre. The highest wheat yield, Princeton, Hamilton, Ewing and Lawrence—12 bushels per acre. The other townships are 10 bushels per acre. The highest potato yield is in Lawrence—300 bushels per acre. In peaches and some other fruits Hopewell leads ; in the small fruits, Hamilton.

Stock is in good condition throughout the county and there is no prevailing disease among them.

What woods we have remaining—a remnant only of that which was the pride of our fathers—is being cut off more and more each succeeding year, and there seems to be no provisions made for the years to come. If the State does not, farmers should, devise and put in operation some plan looking to a future supply of timber for farm purposes at best. And there are corners, sterile knolls and strips of land which might be used for protecting other crops, that might be utilized with chestnut, shellbark and other nut-bearing trees (supplied in variety by J. T. Lovett, Little Silver, N. J.,) and locusts, which would soon be of value in nut-bearing, besides prospectively for timber ; and would retain a supply of moisture to the land and afford shelter to the birds, which are so much needed in destroying the increasing hordes of insects.

CROP REPORTS.

TOWNSHIPS.	CORN.				OATS.			WHEAT.			POTATOES.			SWEET POTATOES.				CABBAGES.			
	*Yield.	Average per acre.	† Number of acres.	‡ Price per bushel.	Yield.	Average per acre.	Number of acres.	Price per bushel.	Yield.	Average barrels per acre.	Number of acres.	Price per barrel.	Yield.	Yield.	Average barrels per acre.	Number of acres.	Price per barrel.	Yield.	Average heads per acre.	Number of acres.	Price per 100.
Ewing.....	110	65	1000	\$0 40	125	30	700	\$0 35	65	12	800	\$1 00	80	30	300	300	\$1 70	75	300	45	\$4 00
Hamilton, East.....	125	45	.....	45	110	32	.....	35	60	12	.....	1 00	75	30	.....	.....	25	125	2000	.....	3 50
Hopewell, North.....	130	50	.....	38	75	35	.....	32 33 1/2	10	.....	.....	95	50	.....	.....	.....	60	.....	.....	.....	.....
Hopewell, South.....	100	50	.....	45	100	40	.....	.....	40	10	.....	1 00	100	40	.....	.....	1 50	.....	.....	.....	.....
Princeton.....	120	60	2000	42	90	30	1500	35	60	12	1500	1 05	100	35	200	.....	1 75	200	4000	50	5 00
Windsor, East.....	120	40	.....	45	105	35	.....	32	75	10	.....	95	100	17	.....	.....	1 50	130	2500	.....	3 00
Windsor, West.....	115	50	.....	45	70	30	.....	35	50	10	.....	1 00	100	35	.....	.....	1 65	.....	.....	.....	.....

* The yield is given as compared with 1884.

† The number of acres under cultivation.

‡ The price, December 1st.

CROP REPORTS—Continued.

TOWNSHIPS.	APPLES.			PEARS.			PEACHES.			GRAPES.			STRAWBERRIES, AND RASPBERRIES.				BLACKBERRIES AND RASPBERRIES.				MISCELLANEOUS.		
	Yield.	Average barrels per acre.	Price per barrel.	Yield.	Average bushels per acre.	Number of acres.	Price per bushel.	Yield.	Average baskets per acre.	Number of acres.	Price per basket.	Yield.	Average quarts per acre.	Number of acres.	Price per quart.	Yield.	Average quarts per acre.	Number of acres.	Price per quart.	* Yield of millet per acre.	* Clover hay.	* Timothy.	Acreage of wheat com- pared with 1884.
Ewing.....	50 10	400	\$1 50	110	250 10	\$0 50	100	110	250	100	\$0 50	100	2000	5	\$0 03	.....	.....	.....	.....	3	.....	1 ¾	100
Hamilton, East.....	20	.....	1 25	70	.....	75	100	100	100	.....	1 50	100	.....	.....	04	40 1200	\$0 09	70	.....	.....	1 ½	1	100
Hopewell, North.....	50	.....	2 00	100	.....	.....	.....	40	.....	.....	55	100	.....	.....	02	25	10	25	.....	.....	.....	.....	.....
Hopewell, South.....	100	.....	.....	200	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1 1 ½	.....	.....
Princeton.....	150 40	300	1 75	150	100 60	1 50	100	120	150	100	.....	100	5000	1	05	100 10 30	2	10 100	1000	5	10 1 ½	1 ½	1 125
Windsor, East.....	110	.....	1 50	110	.....	2 50	.....	90	.....	.....	75	150	.....	.....	02	80	05	105	.....	.....	1 ½	1	.....
Windsor, West.....	100 50	.....	1 50	100	.....	.....	.....	100	150	.....	1 00	.....	.....	.....	.....	50 1500	10	.....	.....	.....	1 ½	2 ½	.....

* Tons per acre.

MIDDLESEX COUNTY.

MIDDLESEX COUNTY BOARD OF AGRICULTURE.

OFFICERS FOR THE YEAR 1886.

<i>President</i>.....	.....	.....
<i>Vice President</i>	SAMUEL BLISH.....	New Brunswick.
<i>Secretary</i>	J. M. WHITE	New Brunswick.
<i>Treasurer</i>	C. E. D. PHELPS.....	New Brunswick.

BOARD OF DIRECTORS.

A. D. NEWELL,	J. G. CORTELYOU,	E. FARMER,
GEO. W. DEVOE,	GEO. H. COOK,	MATTHEW SUYDAM.

DIRECTORS IN STATE BOARD.

D. C. LEWIS (two years).....	Cranbury.
J. M. WHITE (one year).....	New Brunswick.

SOCIETY REPORT FOR 1885.

BY J. M. WHITE.

This society, until November 4th, 1885, was known as the Middlesex Farmers' Club, when it resolved itself into a County Board and elected the above-named officers. During the year from September to April the Society has met monthly to discuss various subjects of interest to agriculturists, but there has not been so much interest manifested as could be wished for, yet as a whole there seems to be advancement in the right direction, and farmers are yearly making it more of a study how to fertilize best with the least expense, and to produce the largest crops with the least labor and outlay consistent with good cultivation, and in all parts of our county we find the farms better tilled and producing finer crops than formerly.

MIDDLESEX COUNTY CROP REPORT.

The past season has not been particularly a propitious one for the agriculturist, as some crops have been light, and others of low price; yet, all things considered, the farmer has been fairly remunerated.

Corn has been an unusually good crop, probably 20 per cent. above the average of former years, the quantity and quality both being good. The yield per acre has been probably on an average from 40 to 50 bushels per acre, and the price about 45 cents per bushel.

The wheat crop was badly killed in February and March, and would not average over half a crop, and yet the price on January 1st was not over one dollar per bushel.

Oats were usually good in quality, and the quantity was above the average, the yield per acre being usually about 35 bushels, though in some instances double that amount is reported. Mr. James Neilson reports a field of 12 acres yellow oats as producing $882\frac{1}{2}$ bushels, or $73\frac{1}{2}$ bushels per acre. These oats succeeded corn and corn-fodder which had been well manured, but the oats received no additional manure.

More potatoes were planted than usual, and the crop in some localities was good, while in others it was light but generally free from disease. The average yield per acre was probably about 40 barrels. Some cases were far above this, one of 6 acres producing 900 barrels, or 150 barrels per acre. Price has not been high, from \$1.25 to \$1.75 per barrel.

The cabbage crop was generally good and sold at paying prices, averaging about \$5 per 100 heads; an acre usually giving from 4,000 to 5,000 heads.

Apples were about three-fourths of a crop, of good quality, and prices from \$1.25 to \$1.75 per barrel.

Pears were abundant, of not the best quality and prices low, probably averaging about 50 cents per bushel.

Peaches were about two-thirds a crop, of medium quality and sold on an average of about 75 cents per bushel.

Grapes were very abundant, of good quality, and sold for from 2 to 6 cents per pound.

Strawberries were not more than half a crop and not as good quality as usual, but sold for fair prices, bringing on an average 8

to 12 cents per quart. This crop was greatly injured by late frosts in spring.

Blackberries were a very light crop, bringing about 12 cents per quart.

Raspberries were an average crop and sold for good prices, averaging about 10 cents per quart.

The hay crop was unusually light, not being over half a crop, but sold for good prices, from \$16 to \$25 per ton.

Almost all kinds of vegetables have been plentiful and of good quality.

There are some industries in this county, such as milk production, &c., of which I have not been able to gather sufficient facts to report, owing to the limited time we have had since the organization of our Board. Hoping to be able to report more fully in the future, we respectfully submit the foregoing.

MONMOUTH COUNTY.

MONMOUTH COUNTY BOARD OF AGRICULTURE.

OFFICERS FOR THE YEAR 1886.

<i>President</i>	JOHN STATESIR.....	Colts Neck.
<i>Vice-President</i>	JOHN H. DENISE.....	Freehold.
<i>Treasurer</i>	JOHN H. WYCKOFF.....	Marlboro.
<i>Secretary</i>	D. D. DENISE.....	Freehold.

BOARD OF DIRECTORS.

D. A. STATESIR.....	Marlboro.
D. A. VANDEVEER.....	Manalapan.
EDWARD T. BEEKMAN.....	Middletown.
CHARLES M. BRUERE.....	Upper Freehold.
LIVINGSTON DUBOIS	Manalapan.

DELEGATES TO STATE BOARD.

D. D. DENISE	Freehold.
D. A. VANDEVEER.....	Manalapan.

MONMOUTH COUNTY CROP REPORT.

BY D. D. DENISE.

The past year has not been a very prosperous one for those who devote their attention to agriculture, though crops are fair but prices very low; some selling less than cost of production. The farmer, as well as the country, needs diversification of industry, and greater economy in production; he needs to produce at less cost than hitherto, and to adapt production more nearly to the demands of the home market, which is fast increasing in our State, and especially in our county; and what we need is to bring a higher intelligence to its aid, and make each acre produce far more than before. The following is a condensed statement of crop reports the past year, made up from reports of farmers from the various townships. The acreage of

wheat was about the same as last year, while the crop was far below, which we attribute to being winter-killed. While some fields have yielded from 25 to 30 bushels per acre, some were plowed up in the spring, making an average of 13 bushels per acre. Price, December 1st, \$1.00 per bushel. John H. Denise, of Freehold, reports from five acres of Finley variety wheat, sowed October 1st, 1884, 500 pounds of phosphate drilled in with wheat, sowed $1\frac{1}{2}$ bushels per acre—217 bushels and 15 pounds; an average of 43 bushels and 27 pounds per acre. Sowed about April 20th, 1885, 200 pounds of nitrate of soda per acre, which he thinks increased the yield from 10 to 15 bushels per acre.

The acreage of rye larger than last year, and the crop good, yielding higher than 40 bushels per acre; the average 18 bushels. Joseph Dubois, of Manalapan, reports from 10 acres, 385 bushels; an average of $38\frac{1}{2}$ bushels per acre.

John W. Herbert, of Marlboro, reports from $5\frac{54}{100}$ acres, 246 bushels of rye, an average of 44 bushels per acre, and 11 tons and 841 pounds of straw. The rye and straw netted \$316.28, an average \$60.00 per acre. Price, December 1st, 61 cents per bushel.

The yield of oats was a good average crop, though there are but few grown in this county.

Corn was an extraordinary crop, probably the largest ever harvested in the county on the same number of acres. I have had several reports of fields yielding from 85 to 95 bushels per acre.

John H. Denise presents the following: Corn planted on an old meadow well underdrained; had laid in sod for four years and received in that time two applications of Squankum marl; after plowing, 50 bushels per acre of slaked lime applied, being thoroughly worked in the soil with wheel harrow; corn planted 20th May, in hills of 4 feet distant; variety, gourd seed, white; handful of fertilizer to 3 hills, covered with soil before planting seed (this not recommended for high land, but is well worthy of a trial on low lands), hastening the corn out of the way of the weeds and birds; farmed with Planet, Jr., cultivator, keeping land as level as possible; yield of best acre, 9,407 pounds— $125\frac{1}{2}$ bushels, at 75 cents per bushel; yield on 5 acres, 42,160 pounds—112 bushels and 32 pounds per acre; yield of a trial plot of 5 acres of heavy clay soil, applying at time of planting, 500 pounds phosphate per acre, and 150 pounds nitrate of soda per acre when corn was 2 feet high, half of the plot covered with stable

manure before planting; corn planted in hills 3 x 4 feet, 3 grains to the hill, flat cultivation; made a very large growth until injured by a heavy wind; yield 95 bushels per acre; price, December 1st, 45 cents per bushel.

The acreage of hay 10 per cent. larger than last year, but crop light, owing to lack of sufficient rain. Average of clover, $1\frac{1}{2}$ tons; timothy, 1 ton per acre. C. W. Hendrickson, of Freehold, reports from 5 acres of clover, 27,610 pounds of hay, an average of 2 tons 1,520 pounds per acre. Howard Ely, from Holmdel, 6 tons from 2 acres. Average price, December 1st, \$20 per ton.

Potatoes, a crop extensively grown in this county, was not up to the average of last year; about 15 per cent. less.

The average made up from the different reports, 52 barrels per acre. W. S. Combs, of Freehold, presents the following: Number of acres, 20; varieties, Mammoth Pearl, Queen of the Valley, American Giant, Magnum Bonum and Beauty of Hebron; total yield, 6,545 bushels; average yield, $327\frac{1}{4}$ bushels per acre; average yield on eight acres, 385 bushels; largest yield on one acre, 409 bushels.

Thomas C. Ely, of Holmdel, reports from 8 acres 1,000 barrels, an average of 125 barrels per acre; average price, December 1st, \$1.30 per barrel.

The tomato crop at the beginning of ripening, which was two weeks earlier than former years, was very promising, but heavy rains soon came which blighted the vines and reduced the crop very much. The average price received by the growers at the canning factories was a little over \$50 per acre. G. W. Solomon reports from $2\frac{35}{100}$ acres grown by him, plants set $4\frac{1}{2} \times 4\frac{1}{2}$ feet, 1,200 pounds of phosphate per acre, 71,230 pounds, making $35\frac{2}{3}$ tons, an average of 15 tons per acre. L. Dubois reports from $\frac{1}{2}$ acre 15,312 pounds—7 tons 1,312 pounds. Price paid at factories, \$7 per ton.

Apples about two-thirds of a crop, with range of price from \$1 to \$1.50 per barrel; red apples selling the best for shipping demand. Isaac Daws reports from 30 acres, 2,270 barrels, which was about half of the yield of last year. Variety, mostly Smith Cider.

Pears very light crop; 30 per cent. compared with last year. Trees looking better, as there has been less blight among them.

Strawberry crop very light. Vines badly killed by cold winter.

Blackberries about two-thirds of a crop. Vines somewhat killed by the winter. John Morris, of Manalapan, reports from one acre sold 4,679 quarts, for which he received \$400.

Grapes very little grown for market. John Vanderver reports from 3 acres of Concord grapes, 19 tons.

Melons of various kinds were abundant and sold very low, not paying shipping expenses in many instances.

Considerable attention is given to the raising of poultry, and is considered to be profitable where carefully managed.

Swine-breeding is not a very prominent agricultural industry, only in Upper Freehold township, and it will be still less in the future. The hog cholera has prevailed to an alarming extent in some sections, and it is to be regretted that a pestilence so prevalent, and carrying disaster and financial loss to so many farmers (for many have lost their whole herds), has not been made a subject of more thorough investigation.

The production of milk is rapidly increasing, as there is a growing demand for it, and many are turning their attention in this channel.

Feeding of cattle for beef is decreasing, as there is but little profit, if any, directly.

REPORT BY EDWARD BODIE.

Of herd-registered cattle in Monmouth county, we have of Jerseys 16 herds, comprising 206 animals; Holsteins, 5 herds, in numbers 56; Shorthorns, 1 herd of 26 head, and 1 herd of Guernseys. Six of our breeders contributed to the public sales the past year, in New York City. J. V. N. Willis, of Marlboro, 21 animals sold for \$9,458; Milton Smock, Marlboro, 4 for \$1,175; D. Arthur Vanderveer, Freehold, 5 for \$1,165. Of private sale, Willis is credited in one lot of 8 calves, his own breeding, \$3,450; 1 cow, \$2,500. McDermott & Sutphin, 1 calf, \$500, and 3 yearlings, \$862. While most of our farmers are conservative in their views as regards thoroughbred cattle, it is to be regretted they do not see the necessity of a pure bull to head their herds. Those producing veal and beef should have a pure bull, either Shorthorn, Hereford or Holstein; for the dairy, a pure Jersey or Holstein. Of the Holsteins, for beef, we have had good specimens at our county fair of calves six months old weighing 600 pounds. For milk yield, D. Arthur Vanderveer, of Freehold, from 6 Jersey cows, sold, from August 1st to January 15th, 13,220 quarts of milk, at 4 cents per quart.

MONMOUTH COUNTY AGRICULTURAL SOCIETY.

OFFICERS FOR THE YEAR 1886.

<i>President</i>	Hon. WILLIAM SPADER.....	Matawan.
<i>Vice Presidents</i>	{ Col. CHAS. D. HENDRICKSON.....	Middletown.
	{ JOHN H. DENISE.....	Freehold.
<i>Secretary</i>	JOHN T. ROSELL	Freehold.
<i>Treasurer</i>	CHAS. H. BUTCHER.....	Freehold.
<i>Manager of Horse Department</i>	GEO. F. WARD.....	Freehold.

MANAGERS.

Hon. WILLIAM SPADER,	THOS. E. MORRIS,	GEO. F. WARD,
Hon. N. S. RUE,	Hon. S. B. OVIATT,	C. D. B. FORMAN,
Hon. GEO. W. BROWN,	Col. C. D. HENDRICKSON,	JAS. H. BUTCHER,
L. F. CONOVER,	J. H. DENISE,	W. H. DAVIS,
JOHN W. PARKER,	HAL. ALLAIRE,	THEO. AUMACK,
EDWARD MARTIN,	CORNELIUS ACKERSON,	J. T. FIELDS.
JOHN V. N. WILLIS,	CHAS. H. BUTCHER,	

Annual Fair, September 7th, 8th and 9th.

In looking over the operations of the Society for the year ending January 1st, 1886, it is with a great deal of satisfaction we note the fact of the improvement in our exhibition, both as to the quality and number of exhibits, and it appears to us that in the future the Society is to occupy a prominent position in the rank of like societies in this or any other State; which our old county of Monmouth is certainly entitled to. The labors of the managers and officers have met with good results.

STATEMENT OF TREASURER.

RECEIPTS.

Loans	\$1,998 00
For entrance fees.....	1,218 00
For stands and ground rents.....	820 75
For gate money.....	3,252 51
For sundries.....	1,197 73
	<hr/>
	\$8,486 99

EXPENDITURES.

For permanent improvements.....	\$365 96
For current expenses (premiums, printing, &c.)	6,941 27
For account expenses former years	85 69
Balance in hand.....	69 07
	<hr/>
	\$8,486 99

Total indebtedness of Society, January 14th, 1886.... \$8,455 48

Not only the managers of the Society, but the stockholders, feel greatly encouraged with the outlook for the future. Knowing the interest taken in our exhibitions, we all feel that, can the fair of 1886 be favored with fair weather, the report of next year will be more interesting than for 1885.

There is some talk of changing the time of the annual fair from the second week in September to the last week of September or first week in October.

SALEM COUNTY.

WEST JERSEY AGRICULTURAL AND HORTICULTURAL ASSOCIATION.

OFFICERS FOR THE YEAR 1886.

<i>President</i>	OMAR BORTON.....	Woodstown.
<i>Vice Presidents</i>	{ JOHN W. DICKENSON.....	Woodstown.
	{ M. J. PAULDING, M. D.....	Daretown.
	{ JOHN HANES.....	Woodstown.
	{ L. A. D. ALLEN.	Woodstown.
<i>Secretary</i>	JAMES D. LAWSON.....	Woodstown.
<i>Treasurer</i>	SAMUEL T. LIPPINCOTT.....	Salem.

EXECUTIVE COMMITTEE.

ROBERT HEWITT,	J. A. HEWITT,	CHARLES R. BURT,
CLARK PETTIT,	ALFRED LIPPINCOTT,	GEORGE COOMBS,
ISAAC C. DUBOIS,	BARCLAY EDWARDS,	HENRY W. AUSTIN.

DELEGATES TO STATE BOARD.

JOHN W. DICKENSON,	ROBERT HEWITT.
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SALEM COUNTY SOCIETY AND CROP REPORTS.

BY J. W. DICKENSON.

As we were favored by fair weather while holding our exhibition, another successful year crowned our efforts, giving substantial proof that the West Jersey Agricultural Association has become a fixed institution. Remarks were made "That our fairs had outgrown the Executive Committee." Notwithstanding, we are expending on permanent improvements annually from \$1,000 to \$1,500.

To draw the people we must be liberal in advertising, and offer a premium list sufficiently large to attract competition. But we are compelled to bear the criticism of many, because we allow the trial of speed by horses. But when we know that three-fourths of the people

are interested in the horse, whether they be citizens or farmers, we think best to gratify their desire and enjoy their presence, giving to us ample funds to make the premium list on agricultural products sufficiently interesting to attract rivalry, thereby guaranteeing the real object of holding fairs.

The question is frequently asked, are the fairs of any benefit to agriculture? Compare the improvement in stock, grain, vegetables, poultry, fancy work and machinery, as we find it to-day, with that which the country could produce thirty years ago. A fair judgment and an honest decision will admit that the great improvement has been brought about by facilities offered by competition at our annual fairs.

As the greater part of our county is a heavy loam soil, the crops grown are wheat, corn, oats, hay and potatoes, while dairying is becoming a very important branch of our industry. Growing early lambs for the New York market is not without its profit, as some have already been sold and shipped from Woodstown, which, by the price paid, would require the consumer to pay about \$1 per pound, if the middle men receive a profit.

Our soil being well adapted to the growth of tomatoes, factories have been erected with sufficient capacity to place the county second, if not first, in the annual pack of counties in the United States.

The hog cholera has been prevalent in some parts of our county, and one dairy has been visited with pleuro-pneumonia.

We have no experimental crops to report. Grain of all kinds last year was very near an average, while potatoes were far above, and of good quality; the hay crop was short. I am satisfied, by observation and experience, the failure to grow crops might, in a great measure, be prevented. Protect the young grass as we would a field of grain, and the complaint will not be so general. The pasturing of the young plants leaves the roots exhausted and unprotected, with little energy to produce growth in a soil which becomes hard and lifeless when left in such condition.

SOMERSET COUNTY.

SOMERSET COUNTY AGRICULTURAL SOCIETY.

(Organized 1870.)

OFFICERS FOR THE YEAR 1886.

<i>President</i>	Col. A. S. TEN EYCK	Somerville.
<i>Vice-President</i>	CALVIN CORLE.	Neshanic.
<i>Treasurer</i>	L. R. VREDENBURG.....	Somerville.
<i>Secretary</i>	WILLIAM S. POTTER	Somerville.

DIRECTORS.

D. D. STELLE.....	Franklin Park.
H. S. LONG.....	Raritan.
JAMES P. MAJOR.....	Somerville.
JOHN R. LEWIS.....	Baskingridge.
JAMES CRAIG.....	Dunellen.
ALBERT VOORHEES ..	Millstone.
H. A. VANDERBECK.....	Lamington.
A. A. CORTLEYOU.....	Neshanic.
JACOB S. HOAGLAND.....	Harlingen.

Delegate to State Board.....WILLIAM S. POTTER.

SOCIETY AND CROP REPORT.

BY WILLIAM S. POTTER.

Annual fair, 1886, at Somerville, September 28th, 29th and 30th.
Number of stockholders, 600.

Receipts from fair, 1885.....	\$5,473 55
Premiums and expenses.....	3,840 15
Profits	\$1,633 40

This year we were favored with good weather and consequently good attendance. Exhibitions were all that we could expect in each department. An increased interest seems manifested every year.

Our farmers throughout the county nearly all attend, and exchange views on modes of farming, use of fertilizers and the best kinds of grain to raise. Sometimes we hear expressed views on the political situation or candidates. With the best regulated fairs, politicians will sometimes get inside the enclosure, get the ear of the farmer, and thus detract his attention from the legitimate object in view when he came to the fair, viz.: to improve his mode of farming and make it more profitable. And, again, inside the ring, when he thinks he has his entire attention, he is not aware of the fact that the farmer is more interested to see whether the black, the gray, or the bay is coming out ahead in the race, than whether this or that particular candidate is to be elected.

Some plan must be devised by our agricultural societies to prevent the politicians from monopolizing our farmers during fairs. Why, even at Waverley, on what is called Political Hill, at the President's headquarters, a farmer can scarcely get a foothold to see the contests on the track, every inch of ground being filled with politicians and a slight sprinkling of the fair sex, friends of the politicians, not even wives of farmers.

I suppose it is thought by politicians, and, perhaps, by people of other professions, that a farmer has no use for speed, except a fast-walking horse. They are slightly in error as far as the farmers of Somerset are concerned. They not only admire style and beauty in a horse, but it is found that the roadster class is the most popular one, and when they get on the road towards the county seat they want to get there. It may be a note coming due at the bank, or some other farmer on the road who is attempting to precede him, in which case fast-walking horses don't fill the bill.

These matters are important to the farmer, and whether he is observing the many beautiful show horses inside the ring or the more speedy ones upon the track, he should not be interrupted by the selfish politician and have his mind diverted.

Our Society meets annually in February for election of officers.

We have been favored by Prof. Cook for several years, who gives an interesting and instructive lecture on farming. Our court house is usually filled. His subject this year is "The Experiment Station, and How it Can Aid Farmers."

The following is our crop report :

CORN.

Yield compared to last year.....	110 per cent.
Average yield per acre.....	35 to 40 bushels.
Price per bushel December 1st.....	40 to 42 cents.

OATS.

Yield compared to last year.....	115 per cent.
Average yield per acre	30 bushels.
Price per bushel December 1st.....	32 cents.

WHEAT.

Yield compared to last year.....	30 per cent.
Average yield per acre	10 bushels.
Price per bushel December 1st.....	95 cents.

POTATOES.

Yield compared to last year.....	80 per cent.
Average yield per acre.....	45 barrels.
Price per barrel December 1st.....	\$1.50.

SWEET POTATOES.

Not grown.

CABBAGES.

Yield compared to last year.....	125 per cent.
Average yield per acre.....	3,000 heads.
Price per 100 December 1st.....	\$4.00.

APPLES.

Yield compared to last year.....	60 per cent.
Average yield per acre.....	25 barrels.
Price per barrel December 1st.....	\$1.75.

PEARS.

Yield compared to last year.....	100 per cent.
Average yield per acre.....	100 bushels.
Price per bushel December 1st.....	\$1.00.

PEACHES.

Yield compared to last year.....	75 per cent.
Average yield per acre.....	50 bushels.
Price per bushel December 1st.....	\$1.25.

GRAPES.

Yield compared to last year.....	100 per cent.
Average yield per acre.....	4,000 pounds.
Average price per pound received.....	5 cents.

STRAWBERRIES.

Yield compared to last year.....	75 per cent.
Yield per acre.....	2,000 quarts.
Average price per quart received.....	12 cents.

BLACKBERRIES AND RASPBERRIES.

Yield compared to last year.....	100 per cent.
Average price per quart received	10 cents.

MISCELLANEOUS.

Yield of millet hay per acre (crop failure, 1885)	3 tons.
Yield of clover hay per acre (crop failure, 1885)	2 tons.
Yield of other hay per acre, timothy.....	1½ tons.

UNION COUNTY.

UNION COUNTY BOARD OF AGRICULTURE.

To the New Jersey State Board of Agriculture :

With feelings of friendship towards the State Board and brother farmers of the State, do we write this, our annual letter. One reason, no doubt, for our friendship is (if you will allow a little digression from statistics and practical farming) that we are mutually related to a stylish maiden, whose real worth we appreciate, notwithstanding the outside world sometimes speaks unkindly of her. A little description of her profile will enable you to recognize her at once, for you all know her. The Delaware river outlines the front of this virgin of the sea, Sussex county the forehead, the Blue Mountains the nose, Water Gap the mouth, Phillipsburg the breast, Trenton is the point of the waist, the Pennsylvania Railroad the waistband, South Jersey the overskirt, Cape May the heel of the foot (which has not as yet emerged from Delaware Bay), the small islands that fringe the coast the furbelows behind, Monmouth county and Sandy Hook the bustle, Middlesex and Union the back and shoulders, Essex and Passaic the back of the neck and head, while Bergen and Hudson counties are the hair, the Palisades representing the chignon, and Bergen Point the part loosely falling over the shoulders. Not to go too much into detail, pointing out other resemblances, let us consider that part called

UNION COUNTY.

Union county is about twelve miles square, divided into twelve townships and contains as many growing towns and villages. While not the largest county in the State, it compares favorably with others in healthfulness, productiveness of soil and beauty of landscape. In some other respects it is second to none. It offers a superior home market for all the products of the farm. The grade of the society,

churches and schools is above the average. The communication with the outside world is excellent, especially New York City. The several railroads that pass through it bring every farm within one or two miles of a depot. These advantages make it desirable for a place of residence, and, one would suppose, if land could be bought cheap enough, a good locality for profitable farming.

The farms are mostly small, ranging from ten to one hundred acres. The soil is of a reddish or chocolate loam, naturally fertile, easily worked and well adapted for growing grass, grain, vegetables and fruit, all of which find a ready market in the village or town near by without the assistance of a middleman. Some of the farms are owned by men of means, who make improvements, keep fancy stock and raise good crops, not so much for profit as to gratify their agricultural taste. Near the railroads many of the land owners are more anxious to grow towns and cities than crops, and this is the reason why a passer-by on the train sees so much unfenced, uncultivated land. This new use to which our land is capable of being put is very attractive to many; while it, no doubt, has added to our population and the selling value our real estate, it has, nevertheless, had a tendency to demoralize farming. This neglected land is principally owned by two classes of persons.

SPECULATORS,

Who do not reside here, who add nothing to our prosperity, but, on the contrary, are letting our once best and finest farms go to rack and ruin. Most of them bought the property some years ago. They expected great things. They had the land mapped out and a copy filed away in the county clerk's office; possibly they may have been the means of one or more houses being built, for which we acknowledge thanks. But their day of usefulness is past. What shall we do with them? They will not sell as long as they can hold the property, unless the purchaser will make good the hopes they once entertained. Neither will they rent it in a shape or for a price that will pay a good, industrious man to cultivate it. As a consequence, the fences are carried off and the land lies idle, growing only noxious weeds, which spread their seeds over adjoining fields. The other class are

NEW YORK BUSINESS MEN,

Who purchased a farm for "a home in the country." They are far preferable to the speculators. The most of them are very desirable citizens, and many of them bring considerable money into the county, make improvements, especially about the house and surroundings; but, inexperienced in farming themselves, and depending entirely on hired help, the conviction is forced upon them that farming for them don't pay; year after year less land is cultivated, new meadows are not seeded down, the fences are allowed to disappear, and field desolation is the result. Now we ask the question, Cannot something be done to help remedy this defect in our farming? The writer has in mind a half-dozen or more farms, once the best in the township of Linden, that have been owned by a speculator. He has added nothing to their value since he bought them, but has rented them to anybody and everybody until they have been cropped and skinned to death. Have not neighbors some rights in the matter? If a city has a right to release taxes on a factory in order to induce its location in their midst, would it not be proper, in our taxing, to discriminate in favor of him who keeps things up in good shape?

These neglected, unfenced lands are not only an eye-sore to the intelligent, tidy farmer, and the foul weeds that sap the soil a source of mischief in the neighborhood, but they are encouraging another evil which is a terror to the would-be cultivator of unfenced land,

TRAMP COWS.

In our cities, towns and villages are a lot of wide-awake foreigners, who own a small house on a lot possibly 25 x 100 feet. These people own from one to a dozen cows, the milk from which is sold in the neighborhood every day. Through the spring, summer and fall these cows are driven out to the suburbs on the unfenced lands and pastured. The small boy that accompanies them is usually saucy, defiant and does not hesitate to steal good picking wherever he can get it, and if the cows get into your fields and destroy your crops, which is not unlikely, the only point in the mind of the boy or owner of the cows is to avoid paying damages, and nine times out of ten they escape. Our protest is not because of sympathy for the dog-in-the-manger speculator, whose land is thus pastured; neither do we begrudge

the help which some poor, ambitious man may derive from the profits of the cows. But we object, and that most earnestly, to the principle which it encourages of compelling a man to fence out other people's cattle. The burden of fencing land is not light, as we all know, and to make it necessary for self-protection is an injustice. Much of our unfenced land would be cultivated was it not for fear of the crops being destroyed by these tramp cows. We are ready to indorse a simple, easily-understood, rigorous law that will make every farmer's barn-yard a pound and give every farmer police authority.

A SUGGESTION IN REGARD TO BIRDS.

Our useful birds are fast disappearing. Cannot the bird law, which is very good so far as it goes, be made more effective? Cannot a sentiment be awakened in the mind of the rising generation, which will lead them to protect instead of destroying these their friends? The State Board of Education have wisely set one day in the year for schools, to be observed as Arbor Day; would it not be well for them also to appoint one day in the year in the interest of birds? A part of the exercises to be compositions on the varieties of home birds and their utility; the sin of destroying their eggs, shooting or trapping them; and the State law read and explained in their midst. We will make one exception to what we have said in regard to birds. The sparrows have increased tenfold, and as to their utility, our voice is against them, and so will not object to the small boy being let loose on them.

FARM STOCK.

While raising stock is not a prominent feature in our agriculture, the here and there a farmer who raises a colt, calf or pig makes the total, if enumerated, quite large. There are probably ten brought into the county, however, for use or consumption to every one raised.

MILK.

The raising of milk for consumption in the adjacent towns and villages, is an important part of our farming; it stands next to hay and corn in importance. We estimate that there are 3,650 cows in the county; the daily product amounts to 22,000 quarts. The average

price the past year has been 3 cents per quart, which our milk raisers think is too low. The reason for the low price is because the freight from the back country is so cheap, farmers there with their larger farms and cheaper lands have the advantage. The practice with those who make a business of raising milk, is to buy native fresh cows with calves by their side, milk them three-fourths of the year and then sell or exchange them for others; if extra good, they keep them on for four or five years. Sowed corn, rye and clover is grown to feed green in summer with pasture; clover and cornstalks or ensilage in winter, with more or less mill-feed and brewers' grains. The cows are kept in stables in stanchions at night and during milking time. The principal inducements for farmers to raise milk, is that it furnishes ready money, it keeps and brings a large quantity of manure on the farm, and then it is an excuse for the farmer to obtain more service from the hired help, early and late at night; still it is a slavish life, very confining. The milkmen who buy and gather the milk are often exacting and fault-finding, and the loss on cows takes off a large slice of the profits.

POULTRY.

The poultry interest has increased within the last three or four years. Quite a number of young men in the villages have put up extensive houses, and are raising eggs and spring chickens for market; some have incubators and report good success in hatching eggs. Most every farmer also keeps from 50 to 100 fowls, so that the total amounts to considerable. But few ducks, geese or turkeys are kept, and there are not many professional breeders of fancy poultry. We have visited several yards, and find the arrangements of houses, methods of feeding, &c., very similar. Some have one house and one-quarter acre of land, others have four or five houses and several acres devoted entirely to chicken purposes. The houses run east and west, are generally 12 feet wide by 100 feet long, one story, closely boarded and lined with paper; along the north side an alley gives access to each pen, which is 9 by 12 feet inside, with an extended yard outside enclosed with wire netting. Everything is made convenient for the fowls and the one that cares for them. A variety of food is given—wheat, corn, scraps of meat, oyster shells, warm quarters and green food in winter, plenty of pure air and water, and cleanliness in the houses, &c. The Leghorns are favorites for

eggs ; the Plymouth Rocks, or light-colored mongrels, for meat. They all appear to have more faith in good care and food than in the breed. Among those who have been particularly successful are : Mr. Frederick V. Greene, of Roselle, with 250 fowls ; the average last year of eggs gathered from February 1st to July 1st was 125 ; the balance of the year averaged 50 daily ; cost of keeping a hen, 6 cents a month ; he sells to private customers in New York ; average price, 35 cents. Mr. L. E. Price, of Roselle, reports having 249 fowls the 1st of December, 1884 ; total number of eggs for the year, 20,857 ; average price, 30 cents ; total receipts for eggs and chickens, \$686.78 ; expenses, interest on money invested, &c., \$361.44 ; total profit \$325.34. Last winter the canker troubled him considerably, causing a loss of 60 fowls. With proper care and attention he thinks a profit of \$2.00 a year can be made from a fowl. He recommends for canker the use of one ounce of sulphuric acid in one-half gallon of water, given daily for two weeks ; one-half gallon will answer for a flock of 75. Mr. W. Bonnel and brother, also of Roselle, each have between 200 and 300 fowls and are equally successful. But probably Mr. Charles R. Dean, of Roselle, is the largest and most expert raiser of eggs and chickens in this county. He does business in New York, but has an arrangement with a young man, Mr. Sidney Williams, who carries out his ideas. His soil is a gravelly loam ; he has five houses, which, taken together, are between 400 and 500 feet long and 14 feet wide. They are closely boarded, lined with tarred paper, properly ventilated, and have every convenience for taking care of the fowls. There are large outside runs both on the north and south side of the building, the north side principally for summer use ; the soil in the yards is frequently turned over to neutralize the poison to the hens from excessive manure. He suggested in addition to the regular care and food, surface drainage as important ; avoid drafts on chickens while roosting ; thinks wood buildings better than so much glass, as they hold the warmth better at night in winter. He keeps 1,200 fowls, mostly Leghorn and Plymouth Rock. His main object is eggs, which he sells in New York for 10 cents a dozen more than most of us receive. He averaged last year 140 eggs from each hen ; average price per dozen, 41 cents. In September he kills off all unneeded roosters and two-year old hens. His conveniences are complete ; his brooder for raising young chickens has good features ; one idea of having it to turn on a pivot in the center, makes it easy to change its

position. Of breeders in fancy poultry, Mr. S. L. Headley has the most varieties and best in quality. He took first and second premiums at the State and Mt. Holly Fairs on W. C. Black Polish, White B. Polish fowls and chicks, G. S. Polish, Black Spanish and Houdans.

HAY.

Our soil is well adapted for growing hay, especially the southern half of the county. Double the number of acres of land is devoted to it of any other crop, and it is the one which principally yields to the farmer money to pay his bills. It is sold direct to the consumer by the load for 5 to 10 cents a hundred more than baled hay. It is generally sown by itself in the late summer or early fall on potato or oat stubble ground; sometimes in connection with quick-growing turnips. Top-dressing with rotted barn-yard manure is attended with satisfactory results. The crop last summer was about on an average with the year before, except in the Passaic Valley, where it is reported good. Neither in '84 or '85 was there over three-fourths of a crop. The present price for first quality timothy is \$23 per ton.

CORN.

Corn is second in importance; probably one-tenth of the land is planted in it. Worn-out meadows are generally plowed up for it. A method of planting pursued by many, is a little different from the old practice. After furrowing and planting in the usual way half a shovelful or forkful of barn-yard manure is put on and covering done with a small plow. Just before the corn comes through, a Thomas harrow or light triangular drag made of rails is drawn over the rows to scrape off the comb of the rows, leveling them and killing starting weeds. It saves labor. Coarser manure can be used. The corn, while growing, stands dry weather better, and the corn comes up fairly good. The crop last year was above the average; 25 per cent. better than the year before. All that is raised is consumed and much more. Mr. Tucker, of Linden, reports a yield of 105 bushels of shelled corn.

POTATOES.

This is an important crop, especially in Union township; more are probably raised here than in all the other townships in the county. The soil is light and well adapted. Newark and Elizabeth afford a market near by. With market gardeners it precedes cabbage, celery and ruta бага turnips. The Early Rose variety still stands at the head. A method practiced by some Union township farmers, where the soil is light, and who have a stock of barn-yard manure, is to spread broadcast and, while plowing under, plant every third furrow; just before the sprout comes up the ground is harrowed over well. Plow 20 paced lands, geeing about, plant the first furrow, placing the potato a little on the right side of the furrow in the loose soil, then go three times around, &c. Two planters can keep the plow going all the time.

Yield compared with '84.....	110
Yield per acre.....	170 bushels.
Number of acres compared with '84.....	100
Price per bushel.....	75 cents.

FRUIT AND OTHER VEGETABLES.

Most every farm has a small apple orchard, some pear and peach trees, grape vines, and some small fruits. Very few, however, make them a specialty. The apple crop last year was almost a failure. Peaches were a good crop on the mountain land in New Providence township. There are five or six orchards there, each containing as many acres. The very late varieties are grown, and find a ready sale at good prices in the near-by towns. There are also a few small vineyards, patches of blackberries, raspberries, currants, and strawberries, but only to supply the home market. Most of the vegetables raised for market are grown in Union township. The crops raised are principally potatoes, sweet corn, tomatoes, cabbage, celery, and ruta бага turnips. Some tomatoes are grown under contract for the canning factory of Earl Bros., in Union township.

FOREST TREES.

The preservation of our woods from fires in the fall and winter is a question of no small importance. Gunners, who not only kill our

game and break down our fences, also, intentionally or accidentally, set fire to the dry leaves and dry rotten wood which lies on the ground, and thereby more or less ruining many acres of young, valuable timber. Mr. David Hand, of Scotch Plains, who owns considerable woodland, makes a good suggestion in telling his practice. In the fall, after the leaves have fallen, and a day or two after a rain, before the leaves have dried too much, burn the woods over under your supervision. The dampness in the ground and leaves prevent excessive heat and rapid spreading.

THE COUNTY BOARD.

The first of last year the Union County Farmers' Club, which has had an existence for eighteen years, and the County Board, organized the year before, united and complied with the requirements of the State law. During the year we have held eleven meetings for conference and discussion of farm topics, and one picnic. The latter was held in June, in Ogden Woodruff's grove, near Elizabeth, and was largely attended and very enjoyable. The display of strawberries was, as usual, large and very fine.

At our annual meeting for the election of officers, held the first Thursday in January, the following were elected: Dennis Long, of Union (P. O., Irvington), President; Dennis C. Crane, of Roselle, Secretary and Librarian, and Robert Woodruff, of Westfield, Treasurer. Board of Directors are Mr. E. P. Beebe, of Elizabeth; Joseph W. Cory, of Westfield; Moses O. Winans, of Linden; Ogden Woodruff, of Elizabeth, and Henry Cook, of Scotch Plains.

STATISTICS.

	Hay.	Corn.	Oats.	Rye.	Wheat.	Potatoes.	Cabbage.	Turnips.
Yield compared with 1884.	85	125	110	75	25	80	110	125
Yield per acre.	2,000	40 bu.	25 bu	20	10	140	2,500	200
Number of acres.....	30,000	10,000	3,000	1,000	1,000	1,500	300	1,000
Price.....	\$20	50 cts.	38	58	100	75	5	25

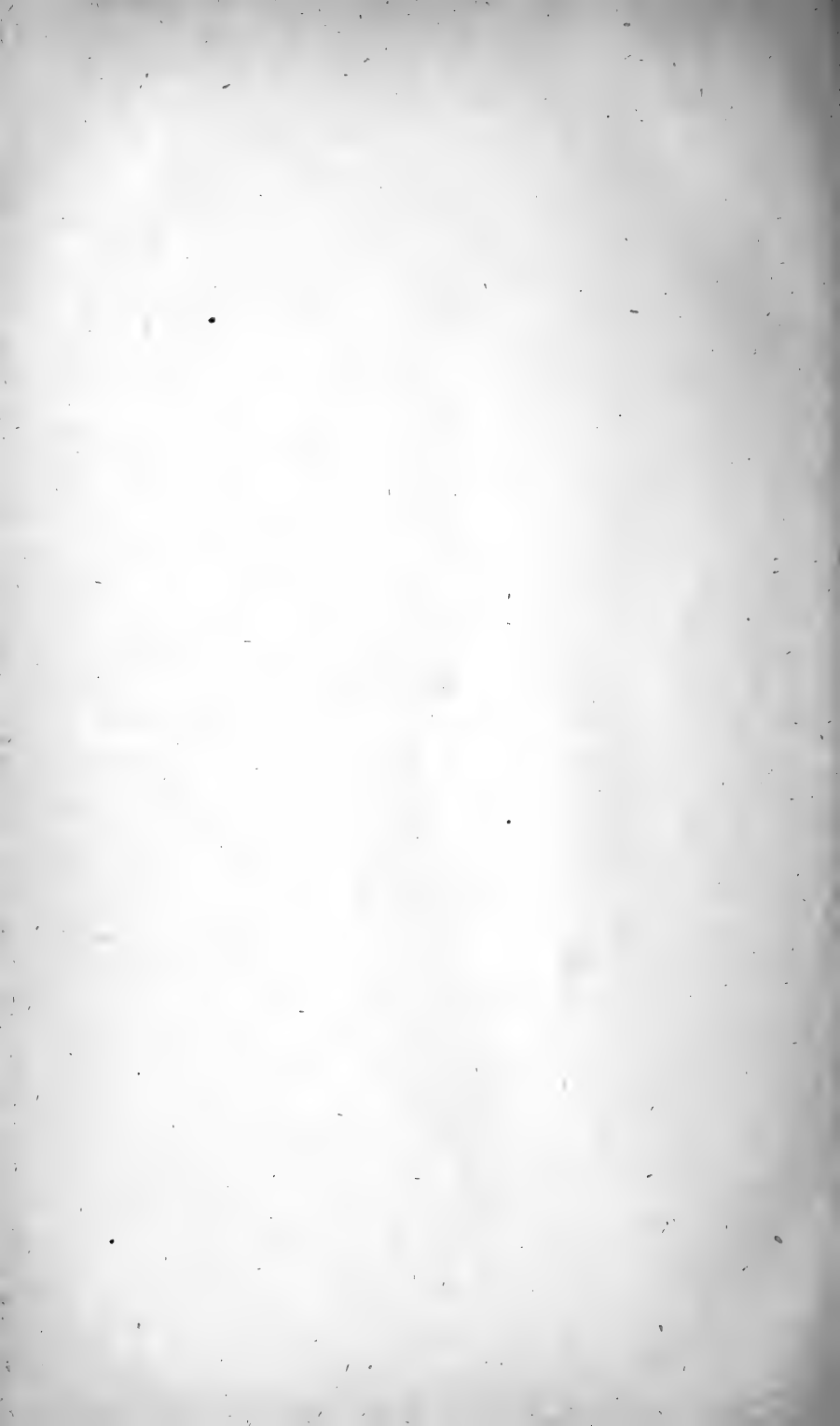
	Tomatoes.	Celery.	Apples.	Pears.	Peaches.	Grapes.	Blackberries.	Raspberries.
Yield compared with 1884.	110	.....	10	120	125	75	100	90
Yield per acre.....	300	.....	1,500	150	200	50	150	150
Number of acres.....	300	.....	1,500	150	200	50	150	150
Price.....	.....	.....	.....	.....	.....	.....	.....	.....

There is somewhere in the neighborhood of 120,000 acres in the county ; 60,000 we estimate is improved land, devoted to the above crops. The other half is probably divided into woodland 30,000 acres ; waste land out to commons and not cropped, but most of it pastured, 10,000 acres ; 15,000 acres in salt meadow, and 5,000 acres in roads and land built on, towns and cities.

To represent counties in which the officers have not been reported, or where County Boards have not yet been organized, the Executive Committee have selected the following gentlemen :

Bergen county.....	HON. WM. WALTER PHELPS.....	Englewood.
Cape May county.....	HON. W. B. MILLER	Cape May.
Hudson county.....	JAMES STEVENS.....	Jersey City.
Morris county.....	ENOS. G. BUDD.....	Budd's Lake.
Ocean county.....	FRANK S. GASKILL.....	Marlboro.
Passaic county.....	GEORGE W. COLFAX.....	Pompton.
Sussex county.....	HON. JOHN A. MCBRIDE.....	Unionville.
Warren county.....	WM. SHIELDS.....	Washington.

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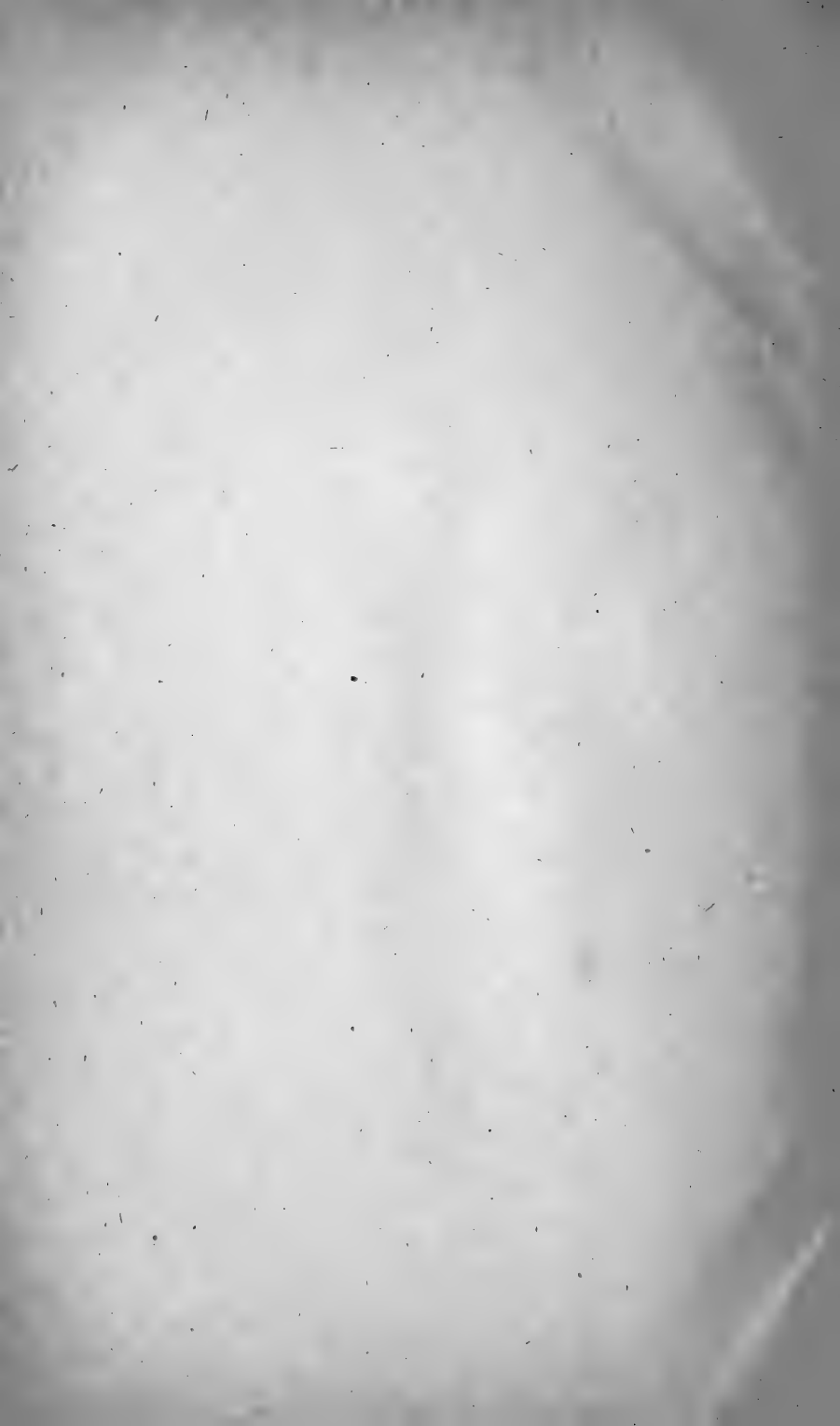
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